OHIO STATE UNIVERSITY
JAN 17 1962

BRITISH MEDICAL JOURNAL

JOURNAL OF THE BRITISH MEDICAL ASSOCIATION

SATURDAY DECEMBER 23 1961

RECEIVED
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BRITISH MEDICAL ASSOCIATION, TAVISTOCK SQUARE, LONDON W.C.1

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BRITISH MEDICAL JOURNAL

LONDON SATURDAY DECEMBER 23 1961

GROWTH AND MORTALITY IN CHILDREN IN AN AFRICAN VILLAGE

BY

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This communication describes the mortality and growth rates of children in a rural Gambian community. The observations were made in the village of Keneba, where since 1949 the staff of the M.R.C. Laboratories, Gambia, have investigated the health of Africans.

Keneba is an African settlement in the West Kiang District of the Protectorate of the Gambia and is typical of the villages situated near the banks of the Gambia river. About 700 inhabitants—Mandinkas—live in dwellings made of mud, grass, or krint (a local bamboo), and maintain themselves almost entirely by agriculture. The food crops—rice, millet (*Pennisetum* sp.), sorghum, maize, and findo (*Digitaria* sp.)—and the only cash crop —groundnuts—are grown throughout the wet months from late May to October. The men usually grow the dry-land crops, rice cultivation being regarded almost exclusively as a responsibility of the women. Cattle, the trypanosome-resistant N'dama, are kept; throughout the period discussed in this communication they totalled just over 100. They are practically never killed for food, and, although milk is welcomed by the villagers, yields are low and little is left for human consumption when the requirements of calves have been satisfied. Goats and sheep are kept, but again these contribute little to the village food supplies, the flesh being eaten only during feasts. Fish is abundant in the river and is consumed readily when available, but fishing is regarded as a low-caste occupation and adds little to the food supply.

Most infants are exclusively breast-fed for four to six months after birth. The earliest food supplements are paps, usually made of rice but sometimes of millet or sorghum, and to these fish and sauces of groundnuts and green leaves are gradually added. Boiled rice grains are also added to the diet, usually by the mother feeding the infant a very small quantity of her own portion during meals. When breast-feeding finally stops, usually between the 18th and 22nd months, the toddler is receiving a mixed diet of the adult pattern.

A baseline survey made in April–May, 1950 (McGregor and Smith, 1952), showed that malaria was hyperendemic, the crude parasite rate for all ages being 54.7%; that approximately 36% and 33% of villagers were carriers of microfilariae of *Wuchereria bancrofti* and *Anopheles perstans* respectively; that 2.5% of the population were suffering from trypanosomiasis; and that hookworm and ascaris infections abounded. Against this background of varied and heavy parasitization a recurrent shortage of the harvested cereals was at first noted. From mid-May until late July, when the early crops, maize, and digitaria were harvested, dwindling cereal stocks were reinforced by extensive collection of bush fruits, nuts, berries, and green leaves. Since 1950 the duration of this recurrent "hungry season" has been progressively reduced by gradual extension of rice cultivation, until in the agricultural year 1957–8 it was entirely eliminated, the cereal supplies lasting from the harvest of 1957 to that of 1958.

Measures Against Disease

Since 1950 research has involved certain operations against disease.

Trypanosomiasis.—All cases diagnosed during the initial survey in 1950 were treated, and since then individual cases were treated as they arose. Trypanosomiasis, therefore, has ceased to exist as an important disease in Keneba.

Insect Vectors.—From August, 1950, to May, 1958, all village houses were treated with residual insecticides throughout the period of high mosquito density, May–November. During the first four years benzene hexachloride was used, and thereafter dieldrin. It was found that the use of such insecticides alone did little to reduce the incidence of mosquito-borne diseases.

Malaria.—The use of residual insecticides coupled with the mass administration of antimalarial drugs at intervals of two to three months over the wet months of each year failed to eradicate malaria from Keneba. From August, 1950, to May, 1956, these measures succeeded only in reducing the incidence of parasitaemia from 54% to about 12% (McGregor, 1956). By May, 1957, when administration of antimalarial drugs had been discontinued for at least 12 months, the crude parasite index had risen to approximately 40% of the total population. More intensive measures were then adopted. From May, 1957, to April, 1958, pyrimethamine was administered fortnightly to all inhabitants, and this achieved virtual eradication of malaria, the crude parasite rate in April, 1958, being less than 1%. After April, 1958, antimalarial measures were discontinued in all save some 80 subjects, and the crude parasite rate rose in April, 1959, to 34.5% and in April, 1960, to 37.3%.

Bancroftian Filariasis.—In 1951 36% of inhabitants were found to be carriers of microfilariae of

W. bancrofti, most of these being treated with diethylcarbamazine (McGregor, Hawking, and Smith, 1952). Four years later a cure rate of 74% and a reduction in microfilarial density of 89% were observed (McGregor and Gilles, 1956). A further small treatment campaign was conducted in 1955, and the individuals treated were four years later noted to show a cure rate of 89% and a reduction in microfilarial density of 98% (McGregor and Gilles, 1960a). These measures are believed to have greatly reduced the incidence of bancroftian filariasis in Keneba but are thought unlikely to have affected the health of the children reviewed in this communication, because this disease is relatively uncommon in young children.

Hookworm Infestation.—Two large-scale attempts were made in May, 1951, and in May, 1952, to control this disease. The attempts appear to have had almost no effect on the incidence and severity of the condition in the village.

Treatment of Serious Disease.—While the investigations were in progress it was necessary to treat gravely ill patients who asked for help. Some of the children in the present study must have received treatment for disease from which they might otherwise have died. Unfortunately it is not possible from the records to identify these children or to assess the nature and frequency of treatment given. However, the availability of treatment depended on the presence or absence of a doctor at Keneba, and on this basis it may be assumed that seriously ill children could have been effectively treated during only about 30% of the 10-year period of study.

By employing a reliable villager literate in Arabic as registrar the dates of births and deaths were reported precisely, and thus records of the true ages of the young child population were gradually built up. The mortality statistics reported in this paper were derived from these records. Growth rates were measured at annual examinations of all available village children in the months of April or May from 1950 to 1960 inclusive.

During the five-year period 1949–53 there were 195 live births. After eliminating two sets of twins and four single births (the latter children left the village at an early age and no more information about them is available) a group of 187 infants remained. Each member of this group, which represents a nearly complete cohort of Keneba births, has been followed up until death occurred or, with survivors, until the seventh year of life.

Mortality

Of the 187 children born alive, 81 (43%) died before reaching 7 years of age. The neonatal death rate was 54 and the infant mortality rate 134 per 1,000 live births. Mortality remained high during the first four years of life, then fell abruptly in the fifth year and remained low thereafter.

The sex ratio at birth was 1.115. With the numbers involved, this cannot be regarded as signifying an unusually high proportion of male births. Death rates were consistently higher in males than in females at all ages except in the sixth year, when there was only one death, that of a female.

Table I gives the age-specific mortality rates for six-month periods from 3 months to 6½ years of age. There were 12 deaths during the first 3 months, leaving 175 survivors aged 3 months. Table I is constructed in the form of an incomplete life-table, death rates (q_x) at age x being calculated from the numbers of live children entering each age period (l_x) and dying during that period (d_x). It is clear that a peak of mortality occurs between 9 and 14 months of age; the death rate then falls sharply, rises slowly to a secondary peak at age 3¼–3¾ years, then falls rapidly to the lowest rates obtained, those after 4¼ years of age.

TABLE I.—*Mortality in the First Seven Years of Life*

Age (x)	Number (l_x)	Deaths (d_x)	Death Rate/ 1,000 6 Months (q_x)
3–8 months	175	4	23
9 months–1¼ years	171	20	117
1¼– years	151	5	33
1¾– ,,	146	6	41
2¼– ,,	140	6	43
2¾– ,,	134	8	60
3¼– ,,	126	9	71
3¾– ,,	117	6	51
4¼– ,,	111	1	9
4¾– ,,	110	1	9
5¼– ,,	109	—	—
5¾– ,,	109	1	9
6¼–6¾ ,,	108	2	19

Table II gives the distribution of births and deaths (both sexes) by month. Nearly two-thirds of the deaths occurred during the wet months, July to October, and 26% occurred in August alone. The slight peak of births during August and September does not explain

TABLE II.—*Distribution of Births and Deaths by Month*

Month	Births		Deaths	
	No.	%	No.	%
January	14	7·5	3	3·7
February	12	6·4	3	3·7
March	12	6·4	3	3·7
April	13	7·0	1	1·2
May	15	8·0	7	8·6
June	16	8·6	3	3·7
July	16	8·6	11	13·6
August	22	11·8	21	25·9
September	28	15·0	8	9·9
October	16	8·6	11	13·6
November	15	8·0	7	8·6
December	8	4·3	3	3·7
Total	187	100	81	100

the high concentration of deaths in the wet season; and the peak of deaths during July–October is just as marked when deaths during the first nine months of life are excluded.

An attempt has been made to link age-specific mortality with month of birth. The births of 45 children who died aged 15 months or older were scattered fairly evenly over all months in the year; it does not appear, therefore, that season of birth has much influence on the chances of death at the later ages. Of 16 children dying within 9 months of birth, five were born in January and five in July, the remaining births being scattered throughout other months. No factor common to the January series was found; they were born in different years and died at different ages. The July series (five deaths under 9 months of age) included four neonatal deaths in July, 1951. Our records do not suggest any explanation.

Of 20 children who died aged 9–14 months, 16 were born when the rains were well established in late July to October. Seven of these 16 deaths took place during August in the following year, when the children concerned were aged 11–13 months.

Table III shows the chances of dying at ages 9–14 months and at ages 15 months to 7 years, children born in January–June being compared with those born in

TABLE III.—*Month of Birth and Chances of Death at Age 9–14 Months and at Age 15 Months–7 Years*

Month of Birth:	January–June	July–December
No. of children alive at 9 months	74	97
Deaths 9–14 months	5	15
Death rate/1,000 6 months ..	68	155
No. of children alive at 15 months	69	82
Deaths 15 months–7 years ..	19	26
Death rate/1,000 6 months ..	24	28

July–December. Children born in the second half of the year—broadly speaking, the rainy season—are more likely to die when aged 9–14 months than those born in the first half of the year. The second part of Table III shows that if this dangerous age is survived the season of birth makes little difference to the subsequent chances of dying.

Growth

Table IV shows the average heights and weights of all children surveyed. Children who died during the course of the survey are included with the survivors for reasons discussed below. Increases of height and weight are

TABLE IV.—*Average Heights and Weights of Keneba Children. Numbers are in Parentheses After the Means*

Age (Yrs.)	Mean Age (Yrs.)	Males				Females			
		Weight (lb.)		Height (in.)		Weight (lb.)		Height (in.)	
		Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
<½	0·3	11·9 (15)	3·0	24·8 (6)	—	11·9 (18)	3·2	—	—
½–	0·7	15·9 (55)	2·8	26·4 (28)	2·2	14·8 (44)	2·4	25·7 (20)	1·8
1–	1·2	18·7 (17)	2·8	28·3 (11)	1·4	17·3 (27)	2·7	27·7 (19)	2·0
1½–	1·7	20·2 (42)	2·4	29·8 (33)	2·2	18·7 (28)	2·1	28·9 (21)	2·0
2–	2·2	22·0 (17)	2·7	30·8 (17)	1·8	21·1 (19)	2·6	30·9 (19)	1·8
2½–	2·7	24·5 (33)	3·0	33·0 (33)	1·8	23·0 (28)	2·5	32·2 (28)	1·9
3–	3·2	26·5 (23)	2·9	34·5 (23)	1·9	27·3 (15)	2·6	34·5 (15)	1·5
3½–	3·7	28·8 (27)	3·1	36·0 (28)	1·4	27·6 (27)	2·5	35·8 (27)	1·4
4–	4·2	31·2 (22)	3·5	37·2 (22)	1·2	30·1 (17)	3·5	36·8 (17)	1·8
4½–	4·7	32·1 (25)	3·5	38·7 (25)	1·8	32·0 (29)	3·0	38·6 (29)	1·7
5–	5·2	35·4 (21)	3·3	40·2 (21)	1·0	34·9 (16)	3·4	40·2 (16)	1·8
5½–	5·7	35·1 (24)	3·5	41·6 (24)	1·5	35·8 (17)	3·5	42·0 (17)	1·5
6–	6·2	40·1 (17)	3·4	43·3 (17)	1·1	38·1 (18)	4·7	42·4 (18)	2·0
6½–7	6·7	39·7 (26)	3·8	44·1 (26)	1·3	38·6 (25)	3·6	44·1 (25)	1·8

fairly regular despite rather small numbers in some age-groups, the annual gain being about 4 lb. (1,814 g.) and 3 in. (7.5 cm.). Boys were slightly heavier and taller than girls.

Some statistical properties of the data in Table IV should be noted. A few children were not seen in early life, and some babies and toddlers who were seen could not be measured for height, but weights were nearly always measured. The measurements were made in April or May each year, so that individual children usually appear in alternate six-month age intervals in the Table. The data are not cross-sectional, nor are they strictly longitudinal, but may be regarded as predominantly longitudinal, especially when alternate age-groups are considered. In consequence, the errors in annual weight and height increments deduced from the Table are certainly smaller than would be obtained in a cross-sectional survey of a similar population. A more sophisticated treatment of the growth data, on the lines suggested by Tanner (1951), does not appear to be justifiable.

Figs. 1 and 2 show, for weight and for height respectively, the average growth curves of Keneba "survivors" (children alive at 7 years of age) and "non-survivors," together with those of British children. After infancy the African children were shorter and lighter than the British children, but from about 1½ years of age the annual increments were similar, so that the growth curves are parallel. It is also clear that the average growth curve of the African children who died was close to that of the children who survived, at least after the first year. Survivors aged 8 to 10 months (an age-range in which reasonable numbers are available) had a mean weight of 15.9 lb. (7,212 g.) and a height of 27.1 in. (68.8 cm.), as compared with 14.8 lb. (6,713 g.) and 25.9 in. (65.8 cm.) for children of similar age who died subsequently. The height difference may not be reliable, since it is difficult to measure the length of babies accurately without special equipment, and the differences are not statistically significant (there were 31 "survivors" and 22 "non-survivors" in this age range). But since 11 of the 22 "non-survivors" died before the next survey the differences may indicate some faltering in growth.

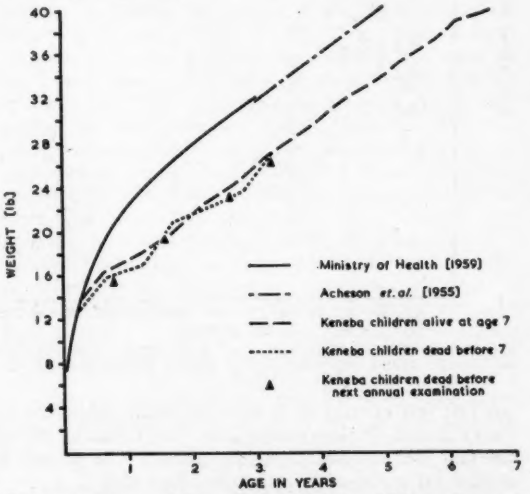
WEIGHT (lb.)
AGE IN YEARS
Ministry of Health (1959)
Acheson et. al. (1955)
Keneba children alive at age 7
Keneba children dead before 7
Keneba children dead before next annual examination

FIG. 1.—Average weight curves of Keneba children alive at 7 years of age, and of those who died before 7 years, compared with British averages for children up to 3 years of age (Ministry of Health, 1959) and over 3 years of age (Acheson *et al.*, 1955).

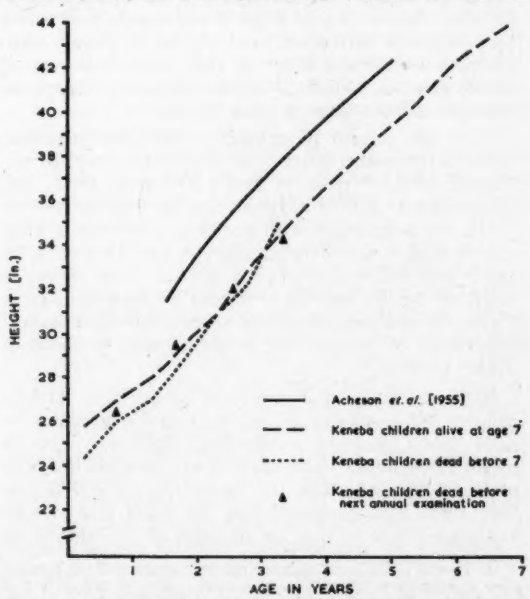
HEIGHT (in.)
AGE IN YEARS
Acheson et. al. (1955)
Keneba children alive at age 7
Keneba children dead before 7
Keneba children dead before next annual examination

FIG. 2.—Average height curves of Keneba children alive at 7 years of age, and of those who died before 7 years, compared with a British average (Acheson *et al.*, 1955).

The suggestion that growth falters in the second half of the first year of life is supported by Fig. 3. This gives the results of a special survey, in May, 1960, of 106 infants under 1 year of age in Keneba and four near-by villages. The weights are plotted by age and compared with an average growth curve of British babies. During the first few months of life the Gambian babies are as heavy as their British counterparts, but during the rest of the first year do not grow as rapidly. The picture is similar for males and for females separately.

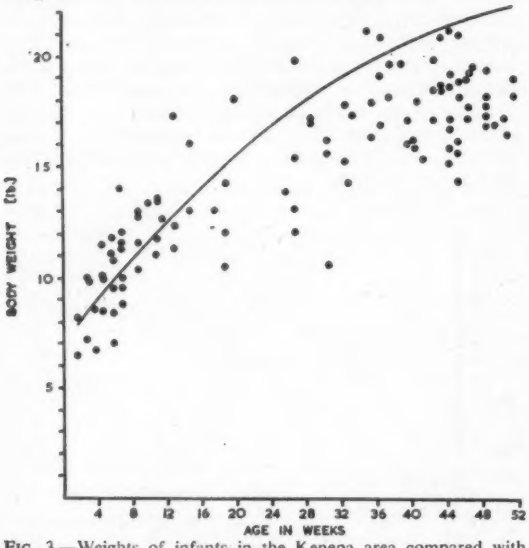

FIG. 3.—Weights of infants in the Keneoa area compared with an average weight curve for British infants (Ministry of Health, 1959).

Discussion

The prodigious wastage of life in young children in Keneba—nearly 40% of those in our sample died within four years of birth—occurred during a period when attempts were being made to reduce the incidence of certain diseases. Mortality rates as high or higher occur throughout most parts of rural Africa.

Also, the pattern of growth closely resembles that reported from other parts of Africa (Nicol, 1949 ; Bruce-Chwatt, 1952 ; Welbourn, 1955 ; McLaren, 1960 ; and many others). Growth rates during the first few months of life are comparable with European standards. Then growth falters, and between about 6 and 18 months of age is well below European standards. The leeway is not made up, so that the Gambian children aged 1½ to 7 years of age are lighter and shorter, but have annual increments of weight and height similar to those of British children.*

High mortality and impaired growth in African children are usually explained as being due to malnutrition, disease, and low standards of child care. In the recent literature the importance of malnutrition has been much emphasized ; thus, for example, Wills and Waterlow (1958) have suggested that the death rate at ages 1–4 years might be used as an index of the nutritional state of a country. We were, however, interested to see that, in a recent report from Uganda, McFie (1960) concluded that malaria appeared to be more important than malnutrition as a cause of mortality in children.

*It is widely believed that complete "recovery" is possible after a temporary retardation of growth. This is probably true in individual instances, but it is not known if the average growth curve of a group would show equally complete recovery. Temporary retardation of growth in young rats appears to cause permanent stunting (Schultze, 1955).

Malnutrition

The faltering of growth at about 1 year of age and the accompanying high mortality are usually ascribed to the replacement of breast milk by foods of low protein content. The literature on kwashiorkor, the syndrome associated with protein deficiency, is now very extensive, but little is known about the incidence and epidemiology of this condition.

In our opinion, primary malnutrition is not likely to be an important cause of high mortality rates and defects of growth in Gambian children. The kwashiorkor syndrome is rare in the area. The breast-fed child is not weaned on to a solitary staple of poor nutritive value, such as sweet potato, plantain, or cassava, but receives paps of rice, millet, or sorghum, which are soon reinforced by ground-nut soups and sauces. There is no reason to think that a diet of breast milk plus such supplements is notably deficient in protein or in any essential amino-acid. The diet during and for a time after weaning may perhaps be insufficient in quantity and difficult for infants and toddlers to digest, but of this there is little evidence at present. The data summarized in Figs. 1 and 2 suggest that babies who died were slightly shorter and lighter than those who survived ; but the differences could easily have occurred by chance, and it is certain that the deaths did not occur selectively among babies who had been notably underweight for a prolonged period.

The diet given after weaning is adequate to support increments of growth as large as those found in British children. In the absence of any information on the growth potential of Gambian children, it is impossible to say whether the fact that they remain smaller than their British counterparts is to be attributed to genetic or nutritional influences, or to both. Though Keneba adults are shorter and lighter than Europeans (McGregor and Smith, 1952), most of them give the impression of being well developed and strong, and they are certainly capable of sustained hard work. The adult diet is sufficient for a high standard of lactation, which is strong evidence in favour of its adequacy in both quality and quantity.

In general the presence of vitamin-deficiency diseases is by no means obvious. Mucosal lesions compatible with lack of riboflavin are, however, common in some years. They tend to appear in the period January–April, and, while children do not escape unscathed, are most noticeable in adolescents and adults. Some individuals may be undernourished or malnourished, or both ; but the general picture suggests that severe malnutrition, when it is present, is more likely to be the consequence than the cause of illness.

Infection

Despite the operations against disease which were detailed above, the pattern of infection in Keneba remains remarkable for its variety and intensity, and communicable diseases are much more often manifest in young children than in older children and adults. Thus the clinical manifestations of malaria, ascariasis, whooping-cough, measles, gastroenteritis, and active trachoma are often seen in the very young but seldom

at later ages.* We do not know how many other diseases follow a similar pattern. Sera from adults living in a village about 8 miles (12.9 km.) from Keneba were found to contain antibodies to the following viruses in the following incidences: poliomyelitis, types 1, 2, and 3, 100% each; West Nile, 100%; yellow fever, 96%; Trinidad dengue, 86%; Zika, 80%; Bunyamwera, 65%; Semliki forest, 61%; Uganda S., 55% (McGregor and Porterfield, in preparation). Although clinical diphtheria has not been noted in the area, diphtheria antitoxin was found in high titre in all sera (Barr and McGregor, in preparation).

Thus, clinical experience and laboratory tests point to the intense transmission of a wide variety of infectious and parasitic diseases. The child is likely to encounter infection early in life, and, if he survives, to show a high level of immunity. It may be that patterns of disease and of immunity are different in other parts of Africa, but the similarity of mortality and growth patterns to those of the Gambia is striking.

Newborn infants, older children, and adults in the Gambia have serum gamma-globulin levels well above those of Europeans. From birth the level falls to its lowest point between 3 and 6 months of age, and then rises slowly until adult levels are attained about the fourth year (Gilles and McGregor, 1959; McGregor and Gilles, 1960b). This suggests that a high level of passive immunity is transmitted from mother to baby, and that at about 6 months of age the decline of passive immunity is overtaken by a slowly rising active immunity, which will presumably be "boosted" by repeated infection.

The pattern of malaria in the Gambia certainly supports a theory of changing levels of immunity. The African born in hyperendemic malarious areas shows a remarkable resistance during the first few months of life (Garnham, 1949). Primary attacks are mild and sometimes asymptomatic. Subsequently the severity of attacks appears to depend on age, peak severity being at about 16–18 months (Foord and McGregor, in preparation). Towards the end of the second year considerable immunity seems to have been acquired, and malarial attacks in the third year become milder though moderately dense parasitaemia may persist (McGregor *et al.*, 1956).

Though transmission of diseases of high endemicity probably continues throughout the year in the Gambia, there is a marked seasonal trend, especially for diseases transmitted by insect vectors. Thus in malaria the frequency of primary attacks is much higher in the wet months, when mosquito density is high. The high mortality of children in the wet months (Table II) corresponds to the peak period of insect-borne disease.

The relationship of the state of immunity to the time of maximal infection may be important in determining whether the individual succumbs. The most advantageous circumstance would be when repeated infections take place under a gradually diminishing "umbrella" of inherited immunity, so that active immunity is acquired smoothly without the occurrence of severe illness. Such conditions may pertain for infants born in the first half of the year; they meet the hazards of their first rainy season before passive immunity is lost, and are well protected by active immunity in their second wet season. By contrast, babies born in the second half of the year will mostly meet severe infections shortly after birth and will be able to deal with these by virtue of a high level of passive immunity. But this passive immunity is being lost during the ensuing dry months and they are not being repeatedly reinfected, so that they meet their second wet season in a vulnerable state. The mortality rates in Table III are consistent with this explanation.

Special reference has been made to malaria because this disease has been most intensively studied. Malaria is probably an important cause of mortality in Keneba babies and toddlers, but it is by no means the only one. Respiratory and alimentary infections are common, and there are occasional epidemics of measles and whooping-cough. The rising trends of mortality between the end of the second year and the end of the fourth year, if not a chance fluctuation due to small numbers, may represent a secondary pattern of infection by, and acquired immunity to, a group of diseases different from that responsible for the peak of mortality around the end of the first year. At present, however, we have no suggestion to offer. Records of causes of mortality do not exist and would be difficult to establish. It may even be difficult to arrive at a diagnosis of illness, since the causes are multiple. These children are exposed to a bewildering variety of infections from protozoa, helminths, bacteria, and viruses, the onslaught of which must represent an enormous obstacle to survival. Primary malnutrition or undernutrition may help to lower resistance, but the amount of resistance offered to infection is more striking than the susceptibility. Children often withstand simultaneously a number of infections, any one of which, untreated, might reasonably be expected to kill a European child.

Care of Infants and Children

The amount of care afforded by the mother almost certainly influences growth and mortality in young children. The adult female in Keneba is expected not only to bear and to rear children but also to produce a main food crop, rice, almost unaided. It is customary, indeed essential, if the food supplies of the family are to be safeguarded, for these women to continue their strenuous agricultural activities during the greater part of pregnancy and to recommence them with minimum delay after delivery.

In the early months of life the infant accompanies the mother whenever she leaves to attend her crops, but the toddler is often left in the village in the care of someone either too old or too young to work. Such practices must be expected sometimes to affect young children adversely, but at present little information exists which permits an assessment of their importance. Again, the effect upon the child of incapacitation of the mother either by accident or illness is not clear although it is probably considerable. Ignorance is also important. Keneba parents often seem unaware of the presence of serious illness in their children, and are surprised when it is pointed out to them. Perhaps this lack of awareness represents acceptance of illness in the young child as a natural and expected phase of development. The population knows nothing about the causes of most diseases, or of the ways in which infections are spread. Superstition is strong and money may be expended to purchase a charm for an ailing child, but little is done to provide adequate nursing or special feeding. An ailing child is seldom encouraged to eat or provided with nourishing titbits, so that illness may be the cause rather than the result of inanition and malnutrition.

*Dangerous epidemics arise occasionally. For example, while this paper was in preparation an outbreak of measles killed about 18% of children under 5 years of age in Keneba. The mortality in children aged 5 to 10 years was less than 2%.

Conclusions

For the reasons given, we believe the main causes of high mortality and faltering growth in young children in the Gambia to be infection and poor care. Deficiency of specific nutrients may contribute, but in our opinion malnutrition is more often secondary to illness than primary. The possibility that some children are underfed during the process of weaning cannot be excluded, but the nutritional and clinical pattern described as characteristic of kwashiorkor is rare.

These results and conclusions probably apply to large areas of rural Africa, especially West Africa. They may not apply to areas where the staple food is of notably low nutritive value, nor to urban areas where the ecology is entirely different.

Summary

The births and deaths of children in a rural Gambian village were registered as they occurred, and their heights and weights were measured annually.

Of 187 children born during a five-year period, 43% died before reaching 7 years of age. Death rates were high during the first 4 years of life, and relatively low from 4 to 7 years of age. The peak of mortality occurred around the age of 1 year and during the rainy season.

During the first 6 months of life, when breast milk is the main or only source of food for babies, growth was comparable with the British average. Then growth appeared to falter for a few months, around the period of peak mortality; but there was no evidence that children who died, compared with those who survived, had been notably underweight. From about 1½ to 7 years of age, heights and weights were less than those of British children, but the annual increments were similar.

It is considered that infectious disease and inadequate maternal care are probably the major factors contributing to high mortality and impaired growth. Malnutrition, while by no means absent, seems to be more often secondary to disease than primary.

We gratefully acknowledge our indebtedness to Dr. D. P. Gamble for the initiation of birth and death records; to Miss Ruth Holliday, Obstetric Medicine Research Unit, Aberdeen, for help with the statistical calculations; to those members of the staff of the M.R.C. Laboratories, Gambia, who have worked at Keneba; and to Dr. S. H. O. Jones, Director of Medical Services, Gambia, for whole-hearted collaboration.

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GUNSHOT WOUNDS OF THE HEART WITH EMBOLISM

REMOVAL OF MISSILES FROM CARDIAC CHAMBERS WITH AID OF EXTRACORPOREAL CIRCULATION

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This is the story of a boy who was shot in the chest with a shotgun. A mass of pellets entered the heart and then dispersed, causing embolism into the greater and lesser circulations. The remaining loose pellets were removed from the cavities of the heart by open operation with the aid of extracorporeal circulation. We have found no published account of any similar course of events even in the masterly and encyclopaedic paper on foreign bodies in the cardiovascular system written by Barrett (1950).

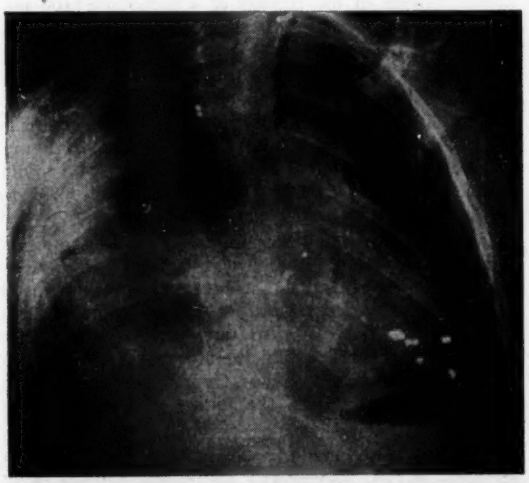
Case Report

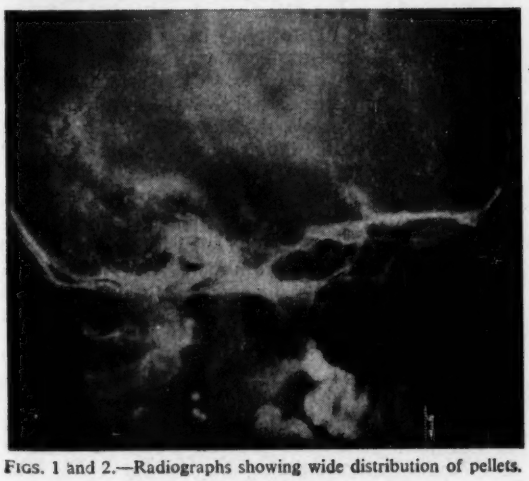
A boy aged 12 was shot from a distance of about 35 yards (32 metres) with a 410 shotgun on May 15, 1961. He collapsed and was taken to Black Notley Hospital in Essex, and admitted under the care of Mr. Ronald Reid. There was a single entry wound in front of the chest to the right of the sternum which was closed with two skin stitches. Two litres of blood was transfused and the right side of the chest aspirated, about a litre of blood being removed. Radiographs of the chest showed many pellets scattered over a wide area. The heart was evidently involved. It was noticed that some of his peripheral pulses were absent.

On May 16 the boy was transferred to St. Thomas's Hospital. On admission he was drowsy and a little cyanosed, but his general circulatory state was satisfactory, with a pulse rate of 100 a minute and blood-pressure, measured with a sphygmomanometer on the left arm, 120/60 mm. Hg. The respiratory rate was 30 a minute. There was a round entry wound, which had been sutured, to the right of the sternum over the third interspace. No exit wound could be found. Physical examination revealed signs of a haemothorax on the right but no evidence of cardiac tamponade. Peripheral pulses could not be felt in the right arm below the brachial or in the right lower limb below the femoral. The peripheral pulses on the left side were normal. Radiographs (Figs. 1 and 2) showed a total of 30 pellets widely distributed. Three lay in the region of the right brachial bifurcation, accounting for the absence of pulses at that wrist. Several others were in the right axillary and subclavian areas and presumably lying in branches of these arteries. Two lay in the left carotid bifurcation area and one in the right. These were apparently impacted in the mouths of the internal carotid arteries, as the superficial temporal pulse was easily felt on each side. A number of other pellets lay in line with the heart. No pellets could be seen in films of the lower limb, so presumably the absence of pulses was due to embolism of radio-translucent material to the right popliteal artery.

After initial improvement the patient's general condition deteriorated slightly and further radiography showed the positions of the pellets in the cardiac area to have changed, suggesting that they lay free inside the cavities of the heart. Surgical intervention held the risk of starting further dangerous bleeding from the heart or the wounded vessels, but it was considered that this risk was outweighed by the dangers of leaving the haemothorax and cardiovascular wounds uncorrected and the risk of further embolism of shot from the heart. Further embolism of shot particularly into the cranial circulation might have had grave or fatal consequences.

Operation.—On May 17 general anaesthesia, administered by Dr. P. G. Luprian, was induced with cyclopropane and suxamethonium and maintained with nitrous oxide, oxygen, and curare. The left femoral artery was prepared for cannulation for perfusion as a first step in case cardiac embarrassment made the use of extracorporeal circulation necessary at an early stage. The chest was opened with a transverse incision through the right fourth and third left interspace. The right chest contained a mass of blood clot. The shot had traversed the right lung, leaving a large contusion around its track. Thence it had apparently entered the right side of the heart, to which the lung and blood clot adhered. It was planned to start left heart perfusion and cooling as a first step in order to avoid disturbing the damaged right side. The pericardium, which contained blood-stained fluid, was incised in the midline.





FIGS. 1 and 2.—Radiographs showing wide distribution of pellets.

The heart was retracted gently in order to insert an 8-mm. cannula into the left atrium, but it promptly fibrillated, so the cannula was rapidly placed in the right atrium instead, while the ventricles were manually compressed to maintain a circulation for 30 seconds until a beat returned and until extracorporeal circulation was started. Perfusion was maintained with a DeBakey type roller pump and a disk oxygenator (Osborn, Bramson, and Gerbode, 1960). The circuit was primed with a mixture of fresh heparinized blood and routine "ACD" banked blood which had been recalcified and heparinized.

During insertion of the cannula into the right atrium one free shot was extracted from the right auricular appendage. The patient was cooled on perfusion and a left atrial decompression catheter inserted at 30° C. Cooling was continued to 10° C., measured in the nasopharynx. Perfusion was then stopped so that the heart could be examined under dry conditions. On looking down through the left atrium and mitral valve into the left ventricle four loose shot were seen lying like eggs in a nest in the apex of the ventricle. They were readily removed with a gall-bladder scoop (Fig. 3). Two other pellets were removed from among the chordae tendineae by elevation and manipulation of the heart. Three further pellets lying in the left atrium near the orifices of the pulmonary veins were next removed. One pellet which had gone through the back of the left atrium was also removed. The remaining pellets could be felt in vessels of the lung, presumably having embolized into branches of the pulmonary artery from the right atrium. These were left undisturbed. This made a total of 11 free pellets removed from the cavities of the heart and one from behind it.

The course of events appeared to have been that some 30 pellets had entered the chest in a loosely adherent mass and traversed the right lung and pericardium. They next entered the right atrium, whence a number embolized into the pulmonary circulation. The rest passed through the interatrial septum to enter the left atrium, whence some continued into the left ventricle and others went on into the systemic arteries. The small wounds in the back of the left atrium, interatrial septum, and front of the right atrium were repaired. The perfusion was restarted, air expelled from the heart, and the patient re-warmed. Heart action resumed spontaneously. Perfusion was discontinued. The pericardium was loosely closed in part. The chest and mediastinal area were drained and the incision closed. A tracheotomy was performed.

Post-operative Progress.—Respiration was artificially assisted with a Smith–Clark respirator through the tracheotomy for four days. At first the patient was semicomatose. This was thought to be due to the short period of inadequate

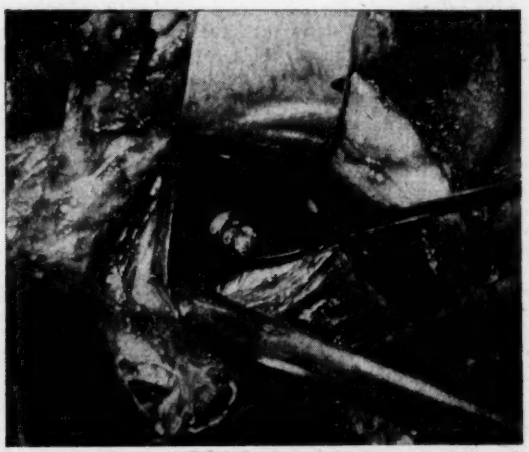


FIG. 3.—Removal of four loose pellets from the apex of the ventricle by means of a gall-bladder scoop.

circulation which had occurred when the heart fibrillated and just before the perfusion was started rather than to the presence of the emboli in the internal carotids. He was moved from the recovery room to the ward on the fourth day after operation. Convalescence was uneventful apart from transient pain and hyperaesthesia in the right foot caused by the popliteal embolism. This was managed conservatively and the popliteal pulse returned and the symptoms subsided. The ankle pulses were still absent but the circulation in the foot was normal when he was discharged to his home on June 30.

Discussion

One of the strange features of this story was the way in which the pellets had remained in a single mass during their course of 35 yards from gun to patient. This discharge of spread shot "en bal" is, however, recognized and sometimes follows some modification of the cartridge or gun-barrel before firing, with the object of diminishing spread and increasing the range. The pellets which were removed from the heart showed evidence of some process such as this, for they were faceted and, indeed, some were still lightly adherent to each other on removal (Fig. 4). According to the account we received they had not ricocheted during their course, nor had they struck any bone in their transit in the body to account for their deformities. Another feature was the size of the shot. They were number fives. The diameter of the pellets was a little

FIG. 4.—Removed pellets (diameter about 3 mm.) showing facets and light adherence.

over 3 mm., so that they were large enough to be arrested and firmly impacted at the bifurcations of the carotid and brachial arteries in a child of this age. Smaller shot might have progressed further into the cranial vessels.

Barrett (1950) quotes two cases, one fatal and one followed by hemiplegia, due to small pellets entering the carotids from gunshot wounds in the neck. He also quotes cases in which foreign bodies left in the heart have caused complications and death due to thrombosis and embolism. This might have been a complication quite apart from the possibility of further embolism of the shot themselves had they not been removed from the heart. Barrett (1950), D. E. Harken (quoted by Barrett), and other writers in recent years all agree that foreign bodies in the heart should be removed. It was not always possible to do this in the past. The use of extracorporeal circulation should greatly facilitate it in the future, as the operation described here, which would have been impossible without it, shows.

The happy result in this case was made possible by many helpers. We are particularly indebted to the other members of the perfusion team at St. Thomas's Hospital; to the nursing staff in the theatre, recovery room, and City of London Ward; to the staff of the Jenner Laboratory; and to the blood donors. The skilful treatment by Mr. Reid's service made the patient's survival possible in the early hours after wounding.

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ALCOHOL AND ROAD TRAFFIC ACCIDENTS

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The effect of small doses of alcohol on a skill resembling driving has been studied by Drew, Colquhoun, and Long (1958), who showed that performance began to deteriorate at blood-alcohol levels of 20 to 30 mg./100 ml. They disproved any threshold level, but showed rather that impairment of performance was progressive and linearly related to blood-alcohol concentration. At a blood-alcohol level of 80 mg./100 ml. the mean error of performance during their test had increased by about 16%.

Similar reports of the effect of these surprisingly small doses of alcohol on driving ability, judgment, reaction time, and behaviour, with associated blood-alcohol concentrations in the regions of 4 to 65 mg./100 ml., have been reported by Lauer (1939), Bjerver and Goldberg (1951), Loomis and West (1958), and Cohen, Dearnaley, and Hansel (1958).

A special committee of the British Medical Association (1960), reporting on the relationship of alcohol to road accidents, concluded that a concentration of 50 mg. of alcohol per 100 ml. of blood in the driver of a motor vehicle was the highest that could be accepted as consistent with the safety of other road-users.

The purpose of the present investigation was to establish to what extent alcohol was a factor in persons involved in road traffic accidents who arrived at a hospital casualty department. The road traffic accident (R.T.A.) casualties comprised any persons involved in injury with a propelled vehicle—a comprehensive group inclusive of injuries sustained from mishaps to drivers to those occurring from the jolting of passengers on buses.

An attempt was made to obtain blood samples from all such R.T.A. casualties. Uninjured patients were simply asked to give a blood sample, no specific purpose being indicated. Where injury had occurred an additional few millilitres of blood was taken at the time of other blood investigations. The specimens were taken immediately after arrival so that they might reflect, as accurately as possible, the blood-alcohol level at the time of the accident. Blood alcohol was estimated by the method of Conway (1957).

During the 12 months of the investigation 574 R.T.A. casualties were recorded in the admissions register; of these, 398 (69%) had blood-alcohol estimation carried out. The discrepancy between these figures is explained by refusals, omissions, and emergencies which precluded delay. We do not believe that any significant selection resulted.

Results

Accident Rate and Time of Day

The 574 casualties which occurred during the 12 months were subdivided into 24 groups to indicate their hourly incidence during the day (Fig. 1 A). The

peak incidence at 11 p.m. occurs immediately after the closing of licensed premises in the district at 10.30 p.m. A traffic census (Manchester City Surveyor, personal communication) taken on a main thoroughfare adjacent to the hospital and representative of the traffic-flow pattern during the 24 hours indicated a maximum traffic flow at 9 a.m. and 6 p.m. At no time after 6 p.m. did traffic-flow figures approach this peak. The maximum hourly accident rate was thus seen to be unrelated to the maximum traffic flow but to occur in the hour following the closure of licensed premises. The 398 R.T.A. casualties who were subjected to blood-alcohol estimations were also subdivided into 24 groups to indicate their hourly incidence during the day. Similar peak periods are recognized (Fig. 1 B). The close relationship between the two tracings (A and B) confirms that the group with alcohol estimations carried out is representative of the 24-hour period and not a selected sample from casualties occurring during licensing hours.

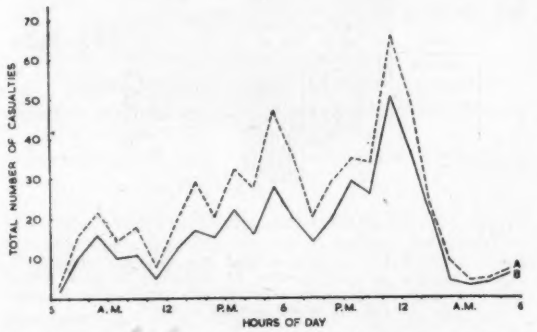

FIG. 1.—Summated R.T.A. casualties for one year allocated to their hourly occurrence by the clock. A=Total hourly R.T.A. casualties (574). B=Total hourly R.T.A. casualties subjected to alcohol estimation (398).

Alcohol Factor in R.T.A. Casualties

For purposes of comparison in this study, the day has been divided into four significant six-hour periods. That between 6 a.m. and 12 midday includes the peak morning traffic period, and that between 12 midday and 6 p.m. the evening traffic peak. The 6 p.m. to 12 midnight period includes the principal hours of social functions, while the 12 midnight to 6 a.m. period is the one of minimum road usage. The incidence of accidents, using this grouping, shows the familiar pattern, with predominance of accidents in the 6 p.m. to 12 midnight group (Fig. 2 D and Table I).

TABLE I.—*Percentage of R.T.A. Casualties Which Occurred in Each Six-hour Period of the Day*

6–12 a.m.	12–6 p.m.	6–12 p.m.	12–6 a.m.
13·6	27·6	39·9	18·8

Three levels of blood alcohol have been chosen for study in this series. These are 20 mg./100 ml. and over, which includes those with small doses; 50 mg./100 ml. and over, levels established as unsafe by investigation committees (World Health Organization, 1954; B.M.A., 1960); and 100 mg./100 ml. and over, where frank intoxication manifestations occur.

The percentage of R.T.A. casualties arriving with these selected levels of blood alcohol in the four six-hour periods of the day is shown in Table II and represented graphically in Fig. 2 A, B, and C. The high incidence of alcohol in the period after 6 p.m. and particularly after midnight, together with the fact that over a third of all casualties arriving after midnight have a blood alcohol over 10 mg./100 ml., indicates the magnitude of the problem. This analysed group included drivers, passengers, and pedestrians, and therefore further subdivision is required to apportion the individual incidence.

TABLE II.—*Percentage of R.T.A. Casualties in Each Six-hour Period of the Day with 20, 50, and 100 mg. of Alcohol per 100 ml. of Blood*

Blood Alcohol (mg./100 ml.)	6–12 a.m.	12–6 p.m.	6–12 p.m.	12–6 a.m.
20	16·6	30·9	57·2	73·3
50	1·8	11·8	35·8	61·3
100	1	10·0	22·0	37·3

TABLE III.—*Percentage of Drivers Found in Each Six-hour Group of R.T.A. Casualties*

6–12 a.m.	12–6 p.m.	6–12 p.m.	12–6 a.m.
14·6	23·9	41·4	20·1

TABLE IV.—*Percentage of R.T.A. Drivers in Each Six-hour Period of the Day with Blood Alcohols of 20, 50, 100 mg./100 ml.*

Blood Alcohol (mg./100 ml.)	6–12 a.m.	12–6 p.m.	6–12 p.m.	12–6 a.m.
20	17·1	36·8	53·5	64·5
50	0	10·5	33·3	58·3
100	0	7·0	22·2	31·2

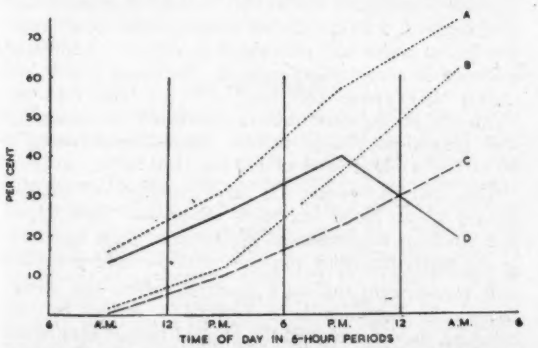

FIG. 2.—Percentage of 398 R.T.A. casualties occurring in each six-hour period of the day (D). Percentage of each six-hour group with 20 mg./100 ml. (A), 50 mg./100 ml. (B), and 100 mg./100 ml. (C) blood alcohol content.

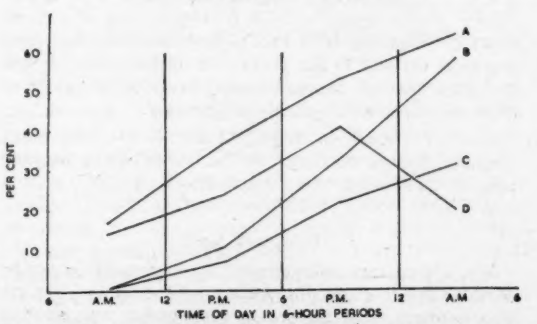

FIG. 3.—Percentage of 239 R.T.A. drivers occurring in each six-hour period of the day (D). Percentage of each six-hour group with 20 mg./100 ml. (A), 50 mg./100 ml. (B), and 100 mg./100 ml. (C) blood alcohol content.

Alcohol Factor in R.T.A. Drivers.—Blood-alcohol estimations were carried out on 239 drivers. The incidence of accidents in the 24-hour period again showed the established pattern (Table III and Fig. 3 D). The percentage of these drivers arriving with the selected blood-alcohol levels during the six-hour divisions of the day is seen in Table IV and Fig. 3 A, B, and C. One-third of the accidents between 6 p.m. and midnight occurred in drivers whose blood alcohol was above the level recognized as safe, and after midnight over a half (58.3%) of accident drivers showed this level. After midnight almost a third (31.2%) of accident drivers had blood alcohol levels indicating frank intoxication (over 100 mg./100 ml.).

Alcohol Factor in R.T.A. Pedestrians.—Blood samples were obtained for alcohol estimation in 64 pedestrians. The incidence was once again maximal between 6 p.m. and midnight (Table V and Fig. 4 D). The percentage of these pedestrians arriving with the selected alcohol levels is seen in Table VI and Fig. 4 A, B, and C. These results suggest that the relaxation of care and impairment of judgment with even a low blood-alcohol level increases the risk to the pedestrian on the road. It will be noted that all the pedestrians involved in accidents after midnight were frankly intoxicated.

TABLE V.—*Percentage of Pedestrians Found in Each Six-hour Period of R.T.A. Casualties*

6–12 a.m.	12–6 p.m.	6–12 p.m.	12–6 a.m.
12·5	34·3	45·3	7·8

TABLE VI.—*Percentage of R.T.A. Pedestrians in Each Six-hour Period of the Day with Blood Alcohols of 20, 50, 100 mg./100 ml.*

Blood Alcohol (mg./100 ml.)	6–12 a.m.	12–6 p.m.	6–12 p.m.	12–6 a.m.
20	12·5	27·5	79·3	100
50	0	9	58·6	100
100	0	9	37·9	100

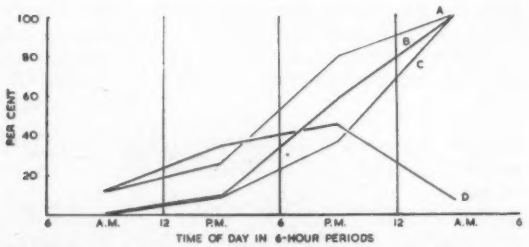

FIG. 4.—Percentage of 64 R.T.A. pedestrians occurring in each six-hour period of the day (D). The percentage of each six-hour group with 20 mg./100 ml. (A), 50 mg./100 ml. (B), and 100 mg./100 ml. (C) blood alcohol content.

Drink and Age

The 239 drivers who attended were grouped according to their age. Each group covered five years (Fig. 5). The percentage of drivers in each group who showed a blood-alcohol level over 50 mg./100 ml. was assessed (Fig. 5, below baseline). Although the largest number of accidents occurred in the 20–25 age-group, alcohol was a factor in a larger portion of the older age-group drivers. There is a suggestion here that it was not particularly the inexperienced young drinker who became involved in acidents, and that the older driver has not acquired immunity to the deleterious effect of alcohol on his driving.

TABLE VII.—*Total Number of Drivers in Age-groups and Percentage of Each Five-year Age-group with 50 mg. of Alcohol per 100 ml. of Blood*

Years	15–	20–	25–	30–	35–	40–	45–	50–	55–	60–	65–	70–	75–79
Total drivers in five-year age-groups	31	62	35	26	18	13	11	22	10	8	1	1	1
% drivers in each group with blood alcohol of 50 mg./100 ml.	10	26·2	32·3	44·0	41·0	25·0	27·2	23·7	30·0	—	—	—	—

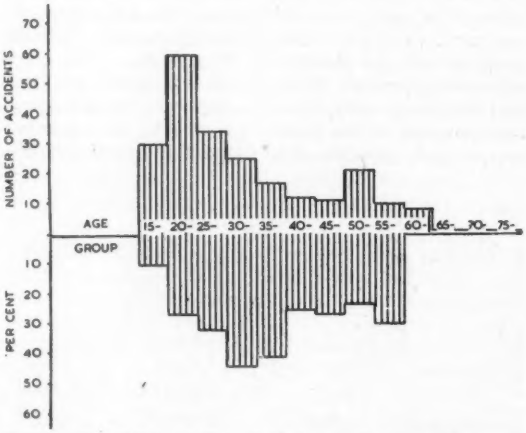

FIG. 5.—239 R.T.A. drivers divided into five-year age-groups. Above baseline is total number of casualties in each group. Below baseline is the percentage of each group with 50 mg./100 ml. blood alcohol or over.

Discussion

This analysed series is not offered for comparison with a control series of drivers not involved in accidents. It was realized that without compulsory powers for analysis only the co-operation of the non-drinking fraction would be secured. Expert committees of the World Health Organization (1954) and the British Medical Association (1960) had already established that to drive with a blood-alcohol concentration of 50 mg./100 ml. or more was prejudicial to safety. Additional evidence in a controlled series by Holcomb (1938) had shown that above this level (50 mg./100 ml.) the incidence of accident drivers increased as compared with general-population drivers, this incidence rising to 30 to 1 at a blood level of 150 mg./100 ml.

The analysis reveals the large number of accident drivers whose blood alcohol is above this "safe" level and confirms the increased incidence of these accidents in the hours following the closure of licensed premises.

It would seem that to a material extent, but unwittingly, the hospitals have become a refuge for the drinking driver, and, rightly, clinical measures directed to recovery have taken precedence over chemical tests and police investigation. Yet where mutilation and death has occurred and a blood alcohol has soared, but

is secret, public safeguards appear to be prejudiced and justiciary investigation of circumstances hampered by lack of authority to assess the alcohol factor in every case.

Death and mutilation occurred in several instances in this series. The handicap of deficient evidence was manifest in that in no case was a charge of driving under the influence of drink proffered.

Summary

Evidence is presented that alcohol is a factor in many accidents requiring hospital attendance. The preponderance of accidents in relation to the evening licensing period and the high percentage of "unsafe" drivers during this period is referred to, and the protection from police investigation afforded to drunken drivers in hospital is discussed.

We record our thanks to Dr. L. Stent, in whose laboratory the alcohol estimations were carried out, and to Mr. D. J. Moss, M.Sc., who performed the estimations. We are grateful to Sister Prenton and the staff of the casualty department for their help in collecting blood samples.

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SUICIDE IN ALCOHOLICS

BY

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Many alcoholics kill themselves. Though this association between alcoholism and suicide is widely recognized it is poorly documented.

Reports of the frequency of suicide in alcoholic populations are rare. Gabriel (1935) reported that 21% of a group of inebriates subsequently committed suicide, and Dahlgren (1945) found 34 (20%) suicides out of 174 alcoholics for whom the cause of death was known. Lemere (1953) collected from patients narratives of 500 deceased relatives whose drinking had constituted a problem; 55 (11%) had committed suicide. Nørvig and Nielsen (1956) found 15 (7%) suicides during a five-year follow-up of 220 male alcoholics discharged from hospital. Reversing the procedure, Robins *et al.* (1959) obtained histories in 119 out of a consecutive series of 134 suicides and discovered that 31 (26%) had been chronic alcoholics. Sullivan (1900) demonstrated high suicide rates in occupations where alcoholism was rife and also anticipated Bandel's numerous observations (summarized by Freudenberg, 1931) of parallels between regional and secular fluctuations in alcohol consumption and male mortality in general and suicide in particular.

The Investigation

Here we report the incidence of suicide in two series of chronic alcoholics. The first consists of 131 consecutive voluntary patients discharged from the Maudsley Hospital after treatment of alcohol addiction; the features of this population have been described by Davies *et al.* (1956), and one of us (N. K.) had at some time attended most of them. Follow-up was from 12 months to 11 years after discharge, the mean being five and a half years. There were 110 males and 21 females, all first admissions to the hospital. The second series comprised 87 patients (62 males and 25 females) admitted to St. Pancras Observation Ward in London, not always for the first time. Their case notes were necessarily less full, but no patient was included in the series unless at least five years of excessive drinking was recorded. Follow-up in all cases in this series was between four and five years. A few patients were fortuitously common to both series; these included two suicides.

Follow-up information was to hand for most of the Maudsley cases but not for the St. Pancras series. Alcoholics are elusive, frequently changing address, so that even their immediate kin may not know their whereabouts; therefore the laborious process of tracing them often ends in failure. As we were concerned only with suicides, whenever our information was incomplete we searched the quarterly alphabetically arranged death registers in the General Register Office. Where a death was entered corresponding in name and age to one of our subjects we purchased a copy of the death certificate, making sure from the additional data thereon that it did refer to our subject. When necessary the information about the cause of death was supplemented by obtaining a transcript of the inquest proceedings. By this method, apart from changes of name, we made sure of tracing all deaths in England and Wales. Our results for suicide are minima, however, because we would not know of deaths in Scotland, Northern Ireland, or abroad.

All except four of the cases we have counted as suicide were so recorded on the certificate. Our detailed knowledge of the circumstances surrounding the four exceptions allowed us, however, to come to a firm conclusion that the subjects had encompassed their own deaths. Two of these subjects were cases of paraldehyde poisoning, one was a case of coma of unknown origin, and the fourth, who had during a six-months period been admitted several times to different hospitals after suicide attempts, was found drowned a few days after his latest discharge. We have not included the unnatural deaths of two subjects who met their end in road accidents, nor that of another found dead with two empty port wine bottles beside her bed.

No woman committed suicide. Of the men 9 (8%) of the Maudsley series and 4 (7%) of the St. Pancras series killed themselves (Table I). This is some 75 to 85 times the expected figures for males of their ages in Greater London, calculated from the Registrar-General's (1960) report (Table II). The suicides were of similar age to the other alcoholics but younger than the generality of suicides in London.

TABLE I.—*Deaths Among Alcoholics*

	Maudsley Series		St. Pancras Series	
	Men	Women	Men	Women
No. of alcoholics	110	21	62	25
Suicides	9	—	4	—
Other deaths:				
Road accidents	1	—	1	—
Found drunk and dead	—	—	—	1
Anaesthetic death	—	—	—	1
Natural causes	3	1	2	—
Total deaths	13	1	7	2

TABLE II.—*Age of Male Alcoholics and Suicides Expected and Observed Number of Suicides*

	Maudsley Series. Average Follow-up 5½ Years						St. Pancras Series. Average Follow-up 4½ Years			
Age	15–	25–	45–	55–	65+	All Ages	25–	45–	55+	All Ages
No. of male alcoholics	1	77	24	7	1	110	35	22	5	62
No. of suicides	—	6	3	—	—	9	2	2	—	4
Expected No. of suicides in Greater London during same period as follow-up	0·0002	0·0585	0·0318	0·0144	0·0025	0·1074	0·0218	0·0238	0·0066	0·0522
Ratio of observed to expected suicides (all ages)						86 : 1				76 : 1

We could find no feature which distinguished, during their stay in hospital, the subjects who committed suicide from the other alcoholics. We know, however, for the Maudsley series that all but one of the suicides had reverted to heavy drinking.

The length of time between discharge and suicide is of interest for the Maudsley subjects, all first admissions. The figures in months are: 2, 11, 13, 13, 19, 21, 32, 32, and 45. The 15 suicides reported by Nørvig and Nielsen all occurred within three and a half years of discharge from hospital.

Discussion

Our concern has been to show the very high risk of suicide for the alcoholic. Two different groups of chronic alcoholics—one composed of people voluntarily subscribing to treatment for addiction and the other of people committed to an observation ward for a variety of causes of which attempting suicide was one—have similar high rates. Both groups had come to psychiatric notice, but it is not safe to believe that such patients have a higher suicide rate than other alcoholics. The alcoholic suicides in the series of Robins *et al.* included many who had recently been in hospital, more often receiving general medical than psychiatric care. Of their alcoholics who committed suicide 77% had previously disclosed their intention. They conclude: "The high frequency of suicidal communications in . . . alcoholics suggests that public education concerning the seriousness of this behaviour . . . may be helpful in reducing the suicide rate." Certainly the seriousness of the risk of suicide has to be appreciated, and our findings indicate that it is particularly important that male patients, especially those who revert to drinking, should be observed closely for some years after discharge. Usually it is just these "failures" who escape follow-up.

Whether there is an underlying psychopathology common to excessive drinking and suicide is a matter only for speculation. Such a belief is often expressed; for example, Wallinga (1949) writes: "An underlying personality disturbance which finally was brought to medical attention through an attempt at self-destruction has been previously evidenced for a prolonged length of time by the refuge in alcohol." Menninger (1938) has more tersely referred to alcoholism as "chronic suicide." Such psychologizing tergiversations are unnecessary here, but our results disprove the corollary that because heavy drinking is a substitute for suicide alcoholics rarely commit it.

Summary

In two series of 131 and 87 chronic alcoholics, 8% and 7% respectively of the males killed themselves within a few years of discharge as in-patients.

A simple technique of follow-up to ascertain the number of subjects who are dead is described.

We thank Dr. D. L. Davies and Dr. E. W. Dunkley for permission to report the Maudsley and St. Pancras cases respectively. Mr. Edgar Myers indefatigably followed up many of the patients, and Dr. M. A. Heasman and the General Register Office provided assistance in tracing others.

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Draft regulations published by the Ministry of Labour require occupiers of certain factories and other premises in Great Britain to nominate a responsible person to be always available during working hours to summon an ambulance. The premises to which these regulations apply are blast furnaces, copper mills, iron mills and foundries, metal works, saw mills, factories in which articles of wood are manufactured (where any of these places employs 500 or more people), and all chemical works. They replace a requirement under the Factories Act, 1937, that occupiers of factories shall provide and maintain an ambulance unless they have made arrangements for one to be obtained. (Draft Blast Furnace and Saw Mills Ambulance (Amendment) Regulations, 1961, H.M.S.O., price 3d. net, and Draft Chemical Works Ambulance (Amendment) Regulations, 1961, H.M.S.O., price 2d. net.)

CARBOGEN IN EXPERIMENTAL CARBON-MONOXIDE POISONING

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The use of carbon dioxide with oxygen (carbogen) for the treatment of carbon-monoxide poisoning was first suggested by Henderson and Haggard (1920) after a series of experiments on dogs in which they used 10% carbon dioxide and 90% oxygen. Later they recommended the use of a mixture of 95% oxygen and 5% carbon dioxide (Haggard and Henderson, 1922). Nicloux, Nerson, Stahl, and Weill (1925) and Walton, Eldridge, Allen, and Witherspoon (1926) were unable to confirm the great increase in the speed of carbon-monoxide elimination which Haggard and Henderson claimed to be due to the presence of carbon dioxide. They therefore advocated the use of pure oxygen only as the treatment of choice. Carbogen mixtures, however, were almost universally adopted throughout the world.

The Medical Research Council Committee for Research on Breathing Apparatus for Protection against Dangerous Fumes and Gases condemned the use of mixtures of oxygen and carbon dioxide in resuscitation (Donald and Paton, 1955). This was done on the hypothesis that a patient in severe respiratory depression was inevitably already suffering from the effects of an excess of carbon dioxide in his tissues and was in urgent need of oxygen alone. In this country carbogen was therefore replaced by oxygen in the first-aid treatment of carbon-monoxide poisoning by ambulance men, by mine-rescue teams, and by other first-aid groups. This change provoked vigorous criticism by certain experienced clinicians, among whom was Marriott (1955a, 1955b), who had successfully treated large numbers of cases of carbon-monoxide poisoning with 7% carbogen. Marriott agreed that the use of carbon dioxide in the treatment of respiratory depression from most causes was illogical, but he urged that carbon-monoxide poisoning was a special case where it was vital that the body should be rid of carbon monoxide by the most rapid and effective means possible, and that was by the use of carbogen.

The work of Killick and Marchant (1959) on dogs clearly demonstrated that 5% carbogen cleared the blood of carbon monoxide significantly faster than did oxygen alone: carbogen produced no dangerous side-actions. The use of 5% carbogen was then given official sanction by the Medical Research Council (1958). The Council also stated that they did not consider that there was anything to be gained by the use of a higher percentage of carbon dioxide in oxygen.

Marriott (1958) still maintained, however, that the best results could only be obtained by the use of 7% carbogen rather than 5%. He emphasized his point by quoting the percentage of deaths from carbon-monoxide poisoning in New York over a period of eight years. During the first three years 5% carbogen was used: in this period there was a higher percentage of deaths than during the succeeding five years when 7% carbogen was used.

In view of all this it seemed desirable to compare experimentally the relative efficiencies of 5% and of 7% carbogen in the treatment of carbon-monoxide poisoning. This was done by gassing a dog under standard conditions until the blood level of carboxyhaemoglobin was 70%. The dog was then given 5% carbogen to breathe and the time required for the gas to be excreted was noted. Several weeks later, under identical conditions, the experiment was repeated in the same dog using 7% carbogen.

Method

The animals were anaesthetized by the intravenous route with minimal doses of pentobarbitone sodium to allow the insertion of a cuffed Magill endotracheal tube: a "polythene" catheter was passed down the external jugular vein to the right atrium to permit sampling of mixed venous blood. Two groups, A and B, each of 10 dogs, were used.

Group A

The circuit shown in Fig. 1 was attached to the endotracheal tube. A T-junction was applied close behind the Heidbrink valve, and through one limb of this passed a supply of oxygen to replace that used by the animal. The carbon dioxide produced by the dog was removed by a to-and-fro soda-lime absorber of the Waters type. Through the other limb of the T-junction measured amounts of pure carbon monoxide were admitted to the circuit. After the addition of each increment of carbon monoxide the concentration of carboxyhaemoglobin in

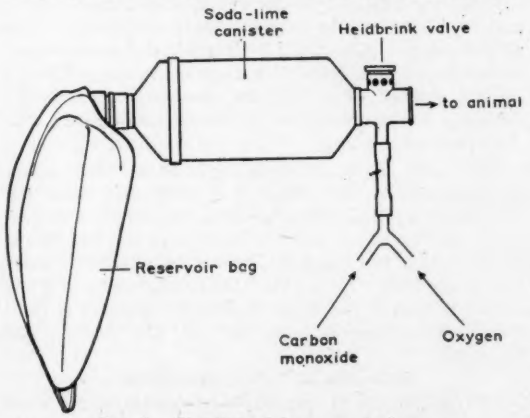

FIG. 1.—Circuit used in group A dogs.

the blood was estimated. The level rose in a stepwise fashion until 70% saturation was reached, taking an average of 45 minutes to do so. At this point gassing was stopped and the resuscitating mixture was applied direct to the inspiratory side of the Heidbrink valve. This latter was now set with the minimal amount of tension on the spring which retains the valve disk in its seating. The soda-lime canister was removed, retaining the bag, which was allowed to fill with the resuscitating mixture and was emptied frequently during the process of resuscitation.

Blood samples were removed at 1, 3, 5, 7, 9, 12, and 15 minutes, and thereafter at five-minute intervals from the beginning of resuscitation until carboxyhaemoglobin could be no longer detected. Thereafter the animals breathed air.

In three dogs of this group the procedure was repeated after several weeks, substituting a Ruben non-return valve for the Heidbrink valve. Again 5% and 7% carbogen were tested. This was done because there is reason to believe that the Heidbrink valve, even with the minimum spring-loading possible, allows a degree of rebreathing while the Ruben valve does not.

Group B

In this series coal-gas and air were withdrawn from cylinders of these gases and passed through a system of flowmeters. The gas mixture then passed into a large reservoir bag and finally on to the dog through a Ruben non-return valve (Fig. 2).

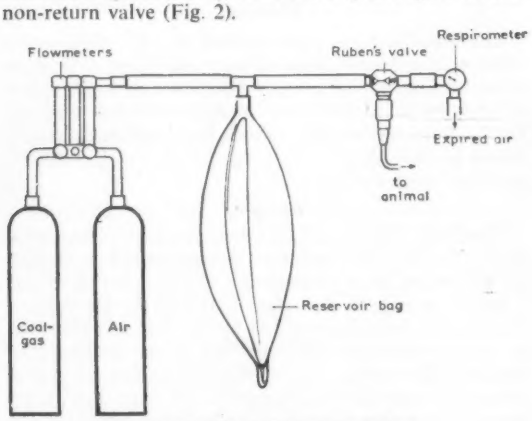

FIG. 2.—Circuit used in group B dogs.

Since the coal-gas in the cylinder contained 18.8% carbon monoxide and the gases were delivered at rates of 100 ml. gas/min. and 5 l. air/min., the gas delivered to the dog contained 0.37% carbon monoxide. The use of the Ruben valve ensured that the gas mixture delivered to the animal was of known composition and prevented rebreathing.

The rising carboxyhaemoglobin levels were again recorded during the period of gassing, and when the 70% level was reached, after an average period of two hours, the carbogen mixture under test was fed into a 20-litre rubber bag which was connected to the inspiratory side of the Ruben valve. The carboxyhaemoglobin levels were followed in the same manner as in group A until the carbon-monoxide content of the blood was negligible.

Estimation of Carboxyhaemoglobin

All estimations of carboxyhaemoglobin levels were performed by Harrison's (1957) quantitative method, using a Hartridge reversion spectroscope. In each group all the observations were made by one observer using his own calibration curve, constructed from the mean values obtained from measurements made on the blood of six dogs.

This method had the advantage of speed and simplicity, but in order to confirm the results obtained by it two other methods of determining carboxyhaemoglobin were carried out in certain cases. They were: (1) the spectrophotometric method of Heilmeyer and Krebs as described by Heilmeyer (1943), using a Unicam SP. 600 spectrophotometer; and (2) the manometric method of Van Slyke and Neill (1924) as modified by Horvath and Roughton (1942).

Table I shows the results obtained when the three methods were applied to the same samples of blood. It will be seen that there is good agreement among the methods down to a level of 35% as recorded by the reversion spectroscope.

TABLE I.—*Estimations of Carboxyhaemoglobin Percentage on the Same Blood Samples by Three Methods*

Reversion Spectroscope	Manometric Method	Spectrophotometric Method
72	80	81
69	78	80
62	64	74
61	58	58
53	53	59
45	49	57
44	43	50
37	41	44
22	38	39
20	29	33
19	27	30
3	23	25

It was therefore decided to take the time for the carboxyhaemoglobin percentage to fall from 70% to 35%—that is, the half-clearance time (T/2)—as a parameter with which to compare the efficiency of treatment of one group with another.

Results

Table II shows the half-clearance times obtained in animals of group A when resuscitated with 5% and 7% carbogen on the circuit utilizing the Heidbrink valve.

TABLE II.—*Half-clearance Times of 10 Dogs Resuscitated with 5% and 7% Carbogen, Using a Heidbrink Valve in the Circuit*

Dog	5% Carbogen. T/2 (min.)	7% Carbogen. T/2 (min.)
1	17	14
2	21	17
3	18	11
4	21	18·5
5	19	19
6	13	12
7	21	13
8	27	15·5
9	30	27
10	18·5	16
Mean	20·55 (S.D. ±4·9)	16·3 (S.D. ±4·6)

The difference between the means of the half-clearance times suggests that 7% carbogen clears the blood of carbon monoxide faster than does 5%—in 16.3 minutes as compared with 20.6 minutes—although the difference is not statistically significant.

In the three animals on which the experiment was repeated, substituting the Ruben for the Heidbrink valve, the increased efficiency of the 7% carbogen mixture disappears: 5% and 7% carbogen appear to be about equal in their effect as judged by the time taken to lower the concentration of carboxyhaemoglobin from 70% to 35%. This is shown in Table III.

In the animals of group B (Table IV) where only the Ruben valve was used, the difference between the means of the half-clearance times for animals resuscitated by 5% and by 7% carbogen again no longer exists—13.8 and 13.4 minutes.

TABLE III.—*Half-clearance Times from Three Dogs when Resuscitated with 5% Carbogen and Then with 7%, Using a Heidbrink Valve and Then a Ruben Valve in the Circuit*

Dog	Heidbrink Valve		Ruben Valve	
	5% Carbogen T 2 (min.)	7% Carbogen T/2 (min.)	5% Carbogen T/2 (min.)	7% Carbogen T/2 (min.)
4	21	18·5	10	8
5	19	19	15	12
8	27	15·5	17	24
Mean	22·3	17·7	14	14·7

TABLE IV.—*Half-clearance Times of 10 Dogs Resuscitated with 5% and 7% Carbogen with the Ruben Non-return Valve in the Circuit*

Dog	5% Carbogen. T/2 (min.)	7% Carbogen. T/2 (min.)
A	9	9
B	17	12·5
C	10	15
D	10	12
E	15	15
F	11	6
G	16	15
H	13	14·5
I	21·5	19
J	15	16
Mean	13·75 (S.D. = 3·9)	13·40 (S.D. = 3·7)

Discussion

Although the results of the first series of experiments (Table II) demonstrate that 7% carbogen clears the blood of carbon monoxide more rapidly than does 5% on the same animals, the second series (Tables III and IV) shows no such difference. The only alteration in the technique of resuscitation is the use of the Heidbrink valve for the first group and the Ruben valve for the second. Further, the difference in mean half-clearance time shown in Table II when 5% and 7% carbogen are used with the Heidbrink valve disappears when the Ruben valve is used. This clearly demonstrates that the difference is a function of the respiratory valve used in the circuit and indicates the importance of using a respiratory valve which does not permit rebreathing when resuscitation is undertaken.

There seems to be little point in using 7% carbogen in preference to 5%, since 5% carbogen will clear the blood of monoxide as efficiently as 7% if a respiratory valve which does not allow rebreathing is placed in the circuit by which the mixture is applied.

None of the dogs in either series died during gassing or resuscitation, though many were gassed to apnoea—an event which occurs shortly after the 70% level of carboxyhaemoglobin is recorded by the reversion spectroscope. Respiratory failure always occurred before cardiac arrest. When respiration ceased, artificial respiration was undertaken by rhythmically squeezing the rebreathing bag filled with the appropriate carbogen mixture for the experiment. All the dogs recovered uneventfully and seemed perfectly well by the following day. Up to three months later there was no evidence of neurological or other damage.

Summary

Two groups of 10 dogs were gassed with carbon monoxide until the level of carboxyhaemoglobin was 70%. The animals were then resuscitated using 5% and 7% carbogen in turn. In group A a Heidbrink valve was placed in the resuscitating circuit and there was a difference in efficiency of resuscitation in favour of 7% carbogen. In group B a Ruben non-return valve was placed in the resuscitating circuit and no difference between the efficiency of 5% and 7% carbogen was demonstrated. The choice of a respiratory valve which prevents rebreathing when resuscitation is undertaken in carbon monoxide poisoning is thus more important than the choice of a 5% or a 7% carbogen mixture.

Our thanks are due to Professors R. C. Garry, Sir Charles F. W. Illingworth, and W. L. Weipers for their interest and help.

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A NEW STERNAL REFLEX IN CASES OF SEVERE CEREBRAL DAMAGE

BY

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In man the sternal region has a specific sensitivity that can be explained in terms of ontogenetic and phylogenetic evolution. Sherrington (1898, 1911, 1915) observed that stimulation of the sternal area in male frogs evokes reflex movements of the fore-limbs, and that these movements are enhanced by decapitation. This, then, is purely a spinal phenomenon suppressed by higher levels of the central nervous system. Many physiological reflexes are suppressed as cerebral evolution progresses, especially if they have no significant value in normal states. But these reflexes become evident in pathological conditions. Minkowski (1921, 1928) insisted that abnormal responses in adults reflect ontogenetic evolution. Moro (1918, 1920) has described a sternal reflex in infants resembling that of Sherrington. After four months of life Moro's reflex becomes inhibited, though persisting much longer in mentally deficient infants. These observations are of great value in understanding the sternal reflex which can be elicited in the presence of cerebral damage. Such lesions abolish the physiological suppression and reveal responses which are found in the early stages of ontogenetic and phylogenetic evolution. Even in physiological states, when subcortical centres are preponderant—that is, during sound sleep—reflexes similar to those described by Sherrington can be obtained by stimulating the skin

of the sternal area with a pin. This phenomenon is much more evident in women than in men. Appropriate stimuli elicit reflexes resembling the embrace reactions, accompanied by a defence component when the stimulus becomes stronger.

I first observed these reactions in 1936 in physiological sleep and in pathological somnolence. The specific sensitivity is strictly limited to the sternal area. Stimulation of other parts of the body is ineffective. Further observations on responses to sternal stimuli showed two different types of reactions, similar to the biphasic Moro reflex. In the first (extensor) phase of Moro's reflex the upper and lower extremities become extended, the arms and fingers abducted, and the head becomes extended. Similar responses occur on stimulation of the sternal area in comatose patients with cerebral lesions. We call them the "decerebrate reactions." In the second (flexor) phase of Moro's reflex the upper limbs become flexed and adducted to the thorax and the lower limbs are flexed. This resembles the first type of sternal reflex often found in heavy stupor or coma resulting from cerebral damage. The decerebrate reactions are less common. Both forms of sternal reflex occur separately.

Significance in Diagnosis

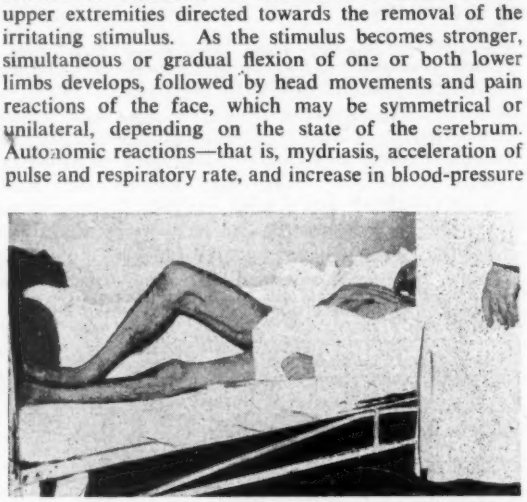
The significance of the sternal area and the sternal reflex in clinical diagnosis was first appreciated by Witold Chodzko. In 1909 he described the sternal reflex: strong percussion of the manubrial area elicited unilateral or bilateral contraction of the biceps. This flexion was accompanied by contraction of other flexors of the upper limbs and sometimes by flexion of the lower limbs. In 169 patients suffering from various psychiatric disorders the phenomenon was present in 28. Chodzko regarded this reflex as a result of pyramidal damage and release of the defence reaction.

Reflexes from the sternal area were also described by Guillain (1925) and Alajouanine. Smirnow (1934) independently described a phenomenon resembling Chodzko's reflex. Astwazaturow (1923, 1929, 1931) emphasizes that sternal responses belong to the "axis reflexes," which can be evoked from the midline of the trunk. Zeldowicz (1937) published his observations on Chodzko's reflex in 192 cases suffering from various central nervous diseases and found it positive in 33%. The two types of sternal reflex are not identical with the responses described above, though the area from which they can be elicited is the same. Responses described by Chodzko and the other authors, except Moro's reflex, result in a single muscle contraction, while our phenomenon consists of compound movement involving upper and lower limbs and the head, and associated with autonomic responses. Our reflex can be produced by repeated pricking at the midline of the manubrial area in cases with heavy stupor or coma resulting from cerebral damage, and never in cases with unaltered consciousness.

The responses to manubrial stimulation have shown that this area is connected with the spinal cord, with all the motor nuclei of the medulla, pons, and midbrain, and with the extrapyramidal nuclei and cerebral cortex. Lesions which interrupt the reflex at any point cause defective responses or abolition of the reflex. Clinical observations on more than 1,000 cases have led to the recognition of two types of sternal responses, depending on the site of the lesion.

Two Types of Sternal Response

The first and more common form of our sternal reflex consists of unilateral or bilateral movements of the upper extremities directed towards the removal of the irritating stimulus. As the stimulus becomes stronger, simultaneous or gradual flexion of one or both lower limbs develops, followed by head movements and pain reactions of the face, which may be symmetrical or unilateral, depending on the state of the cerebrum. Autonomic reactions—that is, mydriasis, acceleration of pulse and respiratory rate, and increase in blood-pressure



Sternal stimulus causes motor reaction of the right limbs = positive sternal reflex. No reaction of the left limbs = negative sternal reflex.

—occur. All these responses must be observed as a whole. Motor reactions differ in their location, vigour, and extent. A unilateral reflex with abolition of motor responses on the opposite side indicates hemiplegia. Defective movements of the upper and lower limbs and face indicate hemiparesis. The hemiplegic or hemiparetic side shows either no responses or defective responses, depending on the extent of the lesion. The value of our sternal reflex became apparent in several patients with severe cerebral damage, where ordinary neurological examination had failed to reveal the site of the lesion. The sternal reflex may assist in determining the side of the lesion in haemorrhages, softenings, etc., of the cerebral hemispheres.

The second type of sternal reflex may be observed in lesions of the brain-stem. Sternal pricking results in decerebrate or similar reactions, with characteristic transient rigidity of the limbs and neck. The rigidity disappears as soon as the stimulus is withdrawn. Usually we see extensor rigidity of the upper limbs. Sometimes the rigidity of the upper limbs becomes flexor in type, with extension of the lower limbs. Sometimes sternal stimulation has resulted in extension of the upper limbs without rigidity. In some cases decerebrate reactions are evident but unilateral. This second form of sternal response has been seen by me and my assistants only in cases with direct or indirect lesions of the midbrain, pons, or medulla, and in cases with ventricular haemorrhage and clots in the fourth ventricle or cisterna magna. Decerebrate reactions have also been observed in conditions resulting in increased intracranial pressure with signs of incipient coning, especially in cases with intracranial tumours. We have never seen decerebrate reactions in lesions of the hemisphere only.

Necropsy Evidence

The diagnostic value of both forms of sternal responses has been confirmed by necropsy in cases of

intracranial tumour, ventricular haemorrhage, meningo-encephalitis, or trauma, accompanied by somnolence, stupor, or coma.

Case 1.—A woman aged 54, transferred from the gynaecological department, complained of severe headache and drowsiness. During lucid intervals neurological examination showed no distinct paretic signs, but marked neck rigidity and tendency for the Babinski sign to be positive on the left side. She could neither stand nor walk. There was bilateral papilloedema. When she was somnolent the sternal response became evident. Sternal stimuli evoked movements of the right limbs. Strong pricking revealed defective movements of the left limbs, more pronounced in the upper left limb. Further investigations revealed a tumour in the right frontal lobe for which a cranial decompression was performed. She died a few days later. At necropsy a metastatic adenocarcinoma was found in the right frontal lobe. In this case the sternal responses facilitated location of the lesion when the usual clinical examination revealed no certain paretic signs.

Case 2.—A 61-year-old woman was treated for chronic endocarditis for one year. On February 14, 1959, she complained of feeling worse and was found comatose a few hours later. On admission she was comatose, with the face turned a little to the right, eyes shut, no active movement, rapid respiration, irregular pulse rate (96 a minute), blood-pressure 115/75; the limbs were rather flaccid, with diminished tendon reflexes. There were no lateralizing signs. Babinski's sign was absent. Strong pricking of the manubrial area elicited motor reaction of the right limbs and a feeble reaction of the left limbs. In these circumstances a left hemiparesis could be assumed as probably a result of cerebral embolism. The same stimuli applied to other areas of the body produced no notable reaction. A few days later, when consciousness was regained, neurological examination revealed a left capsular hemiparesis, and later a left hemiplegia developed, due to embolic damage of the right internal capsule and adjacent basal nuclei reaching the quadrigeminal region.

Case 3.—A man aged 47 was referred from the otological department complaining of a severe right-sided earache over a long period. Otological examination showed otitis media. Signs of meningeal irritation and stupor developed. An intracranial abscess was suspected. Ordinary neurological examination showed no certain signs of a cerebral lesion. After a few days the patient became somnolent and uncooperative. Sternal response showed a brisk defensive reaction of the right limbs. The response of the left limbs was defective. A suspected abscess of the right temporal lobe was confirmed by further investigations and surgical treatment.

Case 4.—A boy aged 9 was admitted to the surgical department with a head injury. He was somnolent and began to vomit. Pricking of the manubrial area showed a characteristic defensive response of the right limbs. The movements of the left limbs were weakened. He was later found to have a subdural haematoma.

As was mentioned above, the second form of the sternal reflex evokes muscle rigidity as is seen in decerebrate conditions.

Case 5.—A man aged 62, admitted to the neurological department, was hypertensive and complaining of severe headache. On admission he was conscious and showed slight signs of meningeal irritation. Blood-pressure 210/110. Neurological examination revealed no paresis. On October 11, 1950, sudden coma developed and painful stimuli applied to the extremities caused no responses. Pricking of the manubrial area caused a tonic extensor reaction of the upper and lower limbs; this ceased as soon as the stimulus was withdrawn. Signs of decerebrate rigidity developed every time the sternum was pricked. The patient died, and at necropsy a haemorrhage arising from the floor of the fourth ventricle was found.

Case 6.—A man aged 35 was admitted in coma to the internal department. He was already being treated in this department for chronic nephritis and hypertension. On admission he showed no voluntary movements of the extremities, his eyes were shut, and reflex iridoplegia was found. Sternal irritation evoked muscle rigidity with some flexion of the upper extremities and extension of the lower limbs, much more pronounced on the left side. Swallowing, slight movements of the lips, acceleration of pulse and respiratory rate, neck rigidity, and a slight rotation of the head to the left were observed. The patient died on the second day after admission, and necropsy revealed a haemorrhage into the left hemisphere, bursting into the ventricle and subarachnoid space of the posterior fossa. Blood clots were also found in the fourth ventricle.

The decerebrate reactions were different in each case, but in every case sternal stimulation evoked the same response at all times. Pricking in other places of the body produced no reaction. Sometimes the manubrial response was partial at the beginning of the disease (only the upper or lower limbs on one side reacted without neck rigidity), becoming more generalized as the disease developed. In other cases slight increase of muscle tone was seen, accompanied by flexion of the fingers. All these signs disappeared when the stimulus was withdrawn.

Case 7.—A physician aged 58 was admitted to the neurological department with a slowly progressive right hemiparesis accompanied by aphasia. He had been treated for years as a case of Buerger's disease, and vasodilator and anti-Parkinsonian drugs improved his condition. Tendon reflexes were increased on the right side and the plantar response on the right was extensor. He also showed some extrapyramidal signs such as bradykinesis and lack of facial mobility. He was a little euphoric and demented. Radiography of the skull showed enlargement of the vascular channels in the left fronto-temporal area. A slight degree of swelling of the optic disk on the left was found. Hypertonic sucrose solution was injected and a lumbar puncture performed. The protein was 66 mg./100 ml., otherwise the cerebrospinal fluid was normal. After puncture the patient became somnolent and the right hemiparesis more marked. Manubrial pricking caused tonic extensor movements of the upper and lower limbs, especially on the left side. Craniotomy revealed an intracranial tumour (meningioma) of the left frontal lobe.

Conclusions

The pathology of the decerebrate reactions is not clearly understood. In several cases necropsy showed that this form of sternal reflex is closely related to indirect or direct damage to the brain-stem below the corpora quadrigemina, the pons, and the medulla. Although many papers have appeared on this subject since Sherrington's publications, decerebrate rigidity in man and animals is still not fully explained. It is uncertain what element causes decerebrate rigidity in man. The symptomatology of decerebrate states is not uniform, and some authors insist that decerebrate phenomena in man and animals have a different pathomechanism. The works of Spatz (1927), Putnam (1933, 1940), Fulton (1943), and Futer (1947) are of special value. Futer discusses his own observations on the subject, particularly concerning decerebrate rigidity in man. It may be assumed that not only lesions of the red nucleus, vestibular nuclei, and cerebellum influence the decerebrate states, but also lesions placed at lower levels of the brain-stem. It is certain that preservation of sensory receptors of the skin is important for the development of decerebrate rigidity. Foerster (1927)

could abolish decerebrate rigidity by interrupting the connexions of the skin receptors. Responses evoked by sternal stimuli cannot be elicited from any other area of the skin, which suggests that sensory receptors in the midline of the sternal area play a special part in the elicitation of decerebrate responses.

Summary

A new sternal reflex, elicitable in states of organic cerebral damage with somnolence or coma, is described.

The special susceptibility of the sternal region, due to ontogenetic and phylogenetic factors, is discussed. Pain stimuli applied to the manubrial area evoke defence reactions (motor and autonomic) which are impaired or absent on the side of the paresis or paralysis. In lesions affecting the brain-stem decerebrate reactions are observed.

Brief illustrative case histories are given.

I wish to express my gratitude to Professor M. Minkowski (Zurich) for showing so much interest in my work and for his positive evaluation of it, and to Professor E. Czarnecki, Director of the Physiological Institute of the Medical Academy in Poznan, Poland.

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POST-OPERATIVE INFECTION IN A CASUALTY DEPARTMENT

BY

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Casualty departments have often been criticized. Clarkson (1956), for example, stated that in his opinion current arrangements in casualty departments throughout the country were the biggest single defect in the Health Service. The recent report of the Nuffield Provincial Hospitals Trust (1960), based on twenty casualty departments serving a population of over five million people, concluded that there was a need for leadership and urgent executive action on the part of the hospital authorities to review, reorganize, and improve the service for casualties.

Many out-patients come to a casualty department for the treatment of wounds or for minor surgical operations. In either instance there is a risk of wound infection which entails discomfort or perhaps danger to the patient and delay in discharge. This subsequent wound sepsis may arise in several ways. It may be due to an extraneous infection introduced pre-operatively in laceration cases, to infection with the patient's own organisms, to cross-infection occurring in the operating theatre, or to post-operative contamination of the wound.

In recent years the investigation of sepsis occurring in hospital has led to modification in ward and operating-theatre practice and design. By contrast the occurrence of sepsis in out-patient departments has not been the subject of such detailed study, although a clearer understanding of the way in which it is caused would be valuable in planning new departments and in modernizing old ones. Several questions need to be answered. For example, there is uncertainty about the danger incurred in treating clean and septic patients in a single operating-theatre.

In this hospital one theatre is used for the surgical treatment of all casualty patients, both clean and septic (other than those attending special departments). We here describe an investigation which relates primarily to 362 clean patients and which has been designed to see if wound infection in the latter could be traced to the coincidental treatment of patients with septic lesions.

Methods

Operating-theatre.—This was a room of 575 sq. ft. (53.5 sq. m.) containing three operating-tables. Instruments were sterilized by boiling. The theatre was ventilated by three small extractor fans. At any one time the nursing staff consisted of a sister and a nurse; the surgical staff was drawn from registrars, house-surgeons, and students. For every patient the operator scrubbed up and wore a gown and a mask: gloves were worn for some clean cases and for all septic cases.

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Cetrimide and 1/2,000 proflavine hemisulphate were used for skin- and wound-cleansing. After operation dry gauze or "tulle gras" dressings were applied according to circumstances.

Patients.—Clean patients—that is, those with fresh lacerations to be sutured, or with cysts, lipomata, etc., requiring minor surgery—were operated upon under local anaesthesia: lacerations were usually sutured within three hours of the injury. For septic patients, such as those with boils and abscesses which needed incision, general anaesthesia was used in about half the cases, the remainder being operated upon under local anaesthesia. It was not always possible to ensure that clean and septic patients were not in the theatre at the same time. All patients except 14 returned for inspection of their wounds, usually on the sixth or seventh post-operative day, and were seen by one of us (J. McK. B.). The room in which they were seen had been used during the preceding two hours for the treatment of both clean and septic patients.

Bacteriology.—Swabs were taken from the noses of clean patients, from the incised lesions of septic patients, and from lacerations immediately before toilet and suture. In addition, swabs were taken from any subsequently infected wounds.

Results

Between November 24, 1960, and March 3, 1961, 362 clean patients and 140 patients with sepsis underwent operation. The patients with sepsis were spaced uniformly throughout the period. *Staph. aureus* was isolated from 93 lesions, organisms other than *Staph. aureus* were isolated from 19, and cultures were sterile or swabs were not taken from the remaining 28.

Table I shows the distribution of the clean patients in terms of age, sex, reason for operation, and site of operation. The presence of subsequent suppuration in clean patients is shown in Table II, together with the average number of days' attendance. It will be seen that 35 (10%) had visible pus in the wound at the first attendance after operation. Table III shows the bacteriological results of examining these wounds.

Dr. Jevons, of the Central Public Health Laboratories, Colindale, kindly typed our staphylococci. The 11 strains of *Staph. aureus* isolated at first dressing were all different. None were of the same type as any of the strains isolated from septic patients on the day of the operation or during the preceding three days. They also differed from the strains isolated from the noses of clean patients during the same period. There was thus no evidence that any of our clean patients who later developed staphylococcal sepsis had been infected from septic patients using the same theatre, or, in other words, that the 140 septic patients had been responsible for staphylococcal sepsis in the 362 clean patients.

TABLE I.—*Particulars of 362 Clean Patients*

Age	No.	*Sex*	No.	*Site of Operation*	No.
<15 years	7	Male	286	Face	46
15–24 ,,	92	Female	76	Scalp and neck	59
25–44 ,,	141			Hand	181
45–64 ,,	106	*Operation*		Wrist and arm	23
65+ ,,	16	Suture of laceration	288	Lower limb	32
		Removal of cyst, etc.	74	Other	21

TABLE II.—*Clean Patients: Length of Treatment Related to Condition of Wound at First and Subsequent Dressing*

	No. of Patients	Average Length of Attendance (Days)
Pus at first dressing	35	13
Incomplete healing (but no pus) at first dressing:		
Pus subsequently	14	23
No pus subsequently*	56	12
Complete healing at first dressing	243	7
Did not attend	14	—
All patients with pus	49	16
,, other patients	299	8
,, patients attending	348	9

*This group includes 10 patients who were discharged after the first dressing although erythema or moisture was still present.

TABLE III.—*Results of Examining Swabs from Septic Wounds of Originally Clean Patients*

	At First Dressing	Subsequently
Total cases of sepsis	35	14
With organisms: total	24	8
Staph. aureus	11*	2
Ps. pyocyanea	1†	2
Coliform bacilli	2	—
Coagulase-negative staphylococci	10	4
Culture sterile	9	4
No swab examined	2	2

* Including one swab with *Staph. aureus* and *Strep. pyogenes.*
† Including one swab with *Ps. pyocyanea* and coagulase-negative staphylococci.

The proportion of patients having pus present in the wound at first dressing increased with age: this was particularly striking in patients with lacerations. There were 193 patients with lacerations who were less than 45 years. Of these, 3.6% had pus at first dressing as compared with 18.5% of patients with pus from the 93 patients who were over 45 years old. No explanation is offered to account for this finding.

Post-operative chemotherapy was given to 32 of the clean cases. Four (12%) of these later had pus at the first dressing, compared with 31 (9%) of the 330 patients who were not so treated. None of the patients with pus but with a sterile culture had received chemotherapy.

Of the 354 clean patients examined, 146 (41%) were found to be nasal carriers of *Staph. aureus* at the time of operation. Of these 146 carriers, 6 (4.1%) were infected with staphylococci at the first dressing as compared with 5 (2.4%) of the 208 non-carriers. In three of the nasal carriers the staphylococcus in the nose at the time of operation was of the same type as that isolated from the subsequently infected wound.

Coagulase-negative staphylococci were occasionally isolated from swabs taken from lacerations before suture, but *Staph. aureus* was isolated from only six patients who have been classified as clean. None of these patients was found to have pus at the first dressing.

When pus did not appear in an initially clean wound until after the first post-operative dressing, its presence may have been unrelated to the original operation. However, patients in which this was noted were of some interest from other points of view. As will be seen from Table II, subsequent infection was known to have occurred in 14 patients. Table III shows the organisms present. In one of the cases in which *Staph. aureus* was found a staphylococcus of the same type had been isolated from the patient's nose and laceration at the time of operation.

Discussion

We have not produced any evidence that the use of a single theatre for clean and septic patients has resulted in infection of the clean patients. But these findings are subject to several reservations. What happens in one place may not happen in another, and if this investigation were to be repeated elsewhere different results might be obtained. We may perhaps have failed

to isolate staphylococci from wounds, and this may apply to swabs taken from noses and wounds at the time of operation. Compared with the extensive investigations of Williams and Miles (1949) our isolation rate of *Staph. aureus* from fresh lacerations was low. This was probably in part due to a difference in cultural methods, and in part due to the fact that our patients were attended to sooner after the accident and their lacerations were smaller. On the other hand, the much shorter time taken by the majority of wounds to heal is almost certainly because our patients were seen sooner after the operation, and were therefore eligible for earlier discharge. As did Williams and Miles (1949), we found that patients might become infected with staphylococci of the same type as those they carried in the nose. When allowance has been made for these reservations, it is still surprising that there was no apparent transfer of staphylococci from septic to clean patients. The explanation for this may perhaps lie in the careful surgical and nursing technique which was used.

In this series of patients with post-operative sepsis *Staph. aureus* accounted for less than a third of the infections at the first dressing. It is not possible to state a source for the majority of these organisms or for the other bacteria isolated from wounds. There can, however, be no doubt of the value to the patient and to the hospital of preventing post-operative infection. Return to work was quicker among the patients whose wounds healed without infection, and the length of their attendance in the casualty department was half that of the patients whose wounds became septic.

Summary

A series of 362 clean patients were operated upon in a casualty theatre used for clean and septic patients. At the first dressing, usually six to seven days later, 35 patients had wounds with pus. *Staph. aureus* was isolated from 11 of these wounds. All the strains were different in type, and none were of the same type as those infecting septic patients operated upon in the same theatre in the same period.

We are indebted to Mr. J. O. Robinson, surgeon in charge of the surgery, for permission to conduct this investigation, and to the sister in charge of the casualty theatre and her staff for their help. We would also like to thank the Medical Research Council for a grant supporting this work.

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"The first general anaesthetics in Gloucester were tried out privately by local doctors, and not, surprisingly, by the Infirmary staff. It was at the house of a Mr. Clutterbuck in February, 1847, that a woman had a finger amputated under ether. Her comments on regaining consciousness were 'God be praised! it is off! Thank you, gentlemen.' It was also Mr. Clutterbuck who introduced the use of chloroform to Gloucester in December, 1847, preferring the latter to ether. Sir James Simpson had only announced his discovery of the anaesthetic properties of chloroform the previous month." (*The Story of Gloucester's Infirmary*, by Brian Frith.)

TRIAL OF PROCAINE IN THE AGED

BY

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In recent published work in Rumania it has been claimed that procaine injections in the elderly produce widespread beneficial effects. The evidence for this, together with an extensive bibliography, has been summarized (Aslan, 1960). Procaine is stated to have a general "eutrophic effect" due to a "vitamin-like" action. Favourable improvement is reported in a large number of disorders. Arteriosclerosis affecting the nervous system, Parkinson's disease, pseudobulbar palsy, and the sequelae of cerebrovascular accidents are said to improve. An increase in physical agility and dexterity occurs, and mental function is enhanced in respect of memory, concentration, and interest. Both degenerative and rheumatoid arthritis show benefit (Aslan and David, 1957). Accelerated union of fractures is stated to occur. Ectodermal effects noted were improvement of senile skin changes and keratoses, psoriasis, vitiligo, lichen planus, and alopecia. Repigmentation and regrowth of hair has been observed.

The treatment is said to have a rejuvenating effect, and much experimental laboratory, biochemical, and clinical work is cited in support of this contention (Aslan, 1957, 1960). Prophylactic administration is now advocated to prevent the onset of senile degenerative changes and to arrest the ageing process.

Medical opinion in this country has been sceptical that rejuvenation can be produced in this way, and the need for a controlled clinical trial has been stressed (*British Medical Journal*, 1959). Much of the confirmatory work supporting this treatment has been published in Eastern Europe. Trials in this country have been, in the main, limited to clinical experience in small series with conflicting results. This paper reports the result of an investigation planned to establish whether procaine injections are of benefit to elderly persons and produce any of the effects claimed for this therapy.

Method

The trial was carried out with two groups of elderly people. The first (group A) consisted of hospital in-patients who were bedfast, incontinent, and confused owing to the combined effects of cerebrovascular disease and old age. This is not an uncommon category of patient in hospitals for the chronic sick. They are all heavy nursing problems, and no form of treatment, or rehabilitation, is known to improve their general state. As definite objective effects were to be looked for in this group no control solutions were used.

The second category (group B) comprised elderly infirm residents in local authority welfare accommodation. It was explained to those who agreed to co-operate that the injections might produce an improvement in general health or be without effect. It was emphasized that the injections would be continued for many months but that they, the patients, could withdraw from the trial if they felt they were being upset or made worse by them. This was a carefully controlled "double-blind"

trial. Each patient was given a trial number. A statistician prepared a randomized list allocating 40 patients into two treatment groups (procaine and isotonic saline). This was kept by the pharmacist, who freshly prepared and labelled the ampoules with the trial numbers. The key to the solutions was not divulged until all the data had been collected. It was anticipated that observer bias by both patient and physician might be high in this group.

Dosage.—Care was taken to see that this corresponded to that recommended by Aslan (1960). Single-dose ampoules containing 5 ml. of 2% procaine solution at a specified *p*H (3.3–4) were prepared. Identical ampoules of isotonic saline were prepared for the control injections. A test dose of 0.5 ml. was given subcutaneously in case of sensitivity. Thereafter 5 ml. was given by the intramuscular route three times weekly for a four-weeks course. This was followed by a rest period of 10 days. Each patient had nine four-weeks courses of injections over a one-year period of observation. The first course was started in May, 1960, and the ninth course ended in April, 1961.

Criteria of Assessment

Each patient in both groups was assessed four times during the trial. A careful clinical examination was made before treatment, and progress was measured after three, six, and nine courses of injections.

In group A objective criteria were used in respect of the mental state, mobility, and incontinence. Each patient was graded and given a score as follows:

Mental State
0. Severe or constant confusion.
1. Moderate confusion—lucid intervals.
2. Mild confusion—usually during the evening only.
3. Normal for age—takes interest in affairs.
4. Fully orientated—reads newspapers, etc.

Mobility
0. Bedfast—requires feeding.
1. Bedfast, but feed themselves.
2. Sits out of bed (more than four hours daily).
3. Walks with help or sticks.
4. Walks alone.

Incontinence (Urine and Faeces)
0. Double, with dirty habits.
1. Constant incontinence, with clean habits.
2. Occasional double incontinence (more than once weekly). Will ask for bottle or bedpan.
3. Urinary incontinence only.
4. No incontinence.

A clinical photograph (colour transparency) was taken before and after treatment to record changes in the facies and hair colour. Care was taken to standardize the method of photography.

If procaine was to be of proved benefit to this type of patient it was felt that evidence of increased interest in their surroundings and self-respect would be noted. An increase in the score for the above-described criteria after the injections would reveal clear evidence of this.

The patients in group B were assessed in a different way. These patients were residents in a home for infirm aged persons and were mentally alert. In each case a full clinical history and examination was made. A record of memory for contemporary events was taken. The patient's weight was recorded as well as subjective comments in respect of appetite, activity, and general sense of well-being. Two tests of agility were timed if the patient was well enough to co-operate. (*a*) Walking test: time taken to rise from an armchair, walk 10 yards, turn, and return to the seated position. (*b*) Stair-climbing: time to rise from an armchair, climb and descend a standard flight of stairs, and return. The conditions of these tests were kept the same for each subsequent examination. The patients were graded (a) worse, (b) stationary, or (c) improved by both their subjective sensations and the observer's objective findings. After final collection of all the results the code used for the procaine and control solutions was released.

Results in Group A Trial

This group consisted of 24 patients (12 of each sex). Their ages ranged from 61 to 94 years. They all showed degenerative changes due to old age or obvious evidence of cerebrovascular disease (eight patients). All the patients were doubly incontinent, and 21 had dirty personal habits. Attempts in retraining them had failed. Mental confusion was present, in varying degree, in all of the patients; 14 were severely demented. All were bedfast nursing cases except when put into chairs by the staff for short periods. The final result after one year's treatment is shown in Table I.

TABLE I

	Men	Women
Died	4	6
Worse	2	3*
Stationary	5	3*
Slight improvement	—	—
Marked ,,	1	—
	12	12

* One patient ceased injections after six courses as she became unsettled and upset by them.

The ages of those who died and of the survivors showed no special difference. The one patient to improve was a hemiplegic man whose course was in keeping with the known vagaries of cerebrovascular disease. With this one exception the injections were without effect on the mental state, incontinence, habits, and degree of mobility. A comparison of the clinical photographs showed no change in the facial appearance or in colour or growth of the hair. It was concluded that procaine injections had not produced any demonstrable beneficial effect in this group.

Results in Group B Trial

This group consisted of 20 men and 20 women. The ages of the men were 73–89 years and of the women 65–90 years; 32 (80%) of the subjects were over 80. They were cared for in a home for elderly people, the majority being "ground floor" types of case. They showed many of the physical infirmities of old age yet their mental function was very good for their years.

The final assessment after one year's treatment is given in Table II. It is seen that nearly half of both groups had deteriorated or died, and that the clinician's and patient's personal assessment of deterioration were

TABLE II

		Control			Procaine		
		F	M	Total	F	M	Total
Patient's subjective assessment	Worse or died	3	6	9	5	5	10
	Stationary	4	4	8	1	3	4
	Improved	2	1	3	5	1	6
Clinician's objective assessment	Worse or died	3	6	9	5	5	10
	Stationary	4	3	7	4	4	8
	Improved	2	2	4	2	—	2
Deaths		—	2	2	3	3	6

the same. Six patients receiving procaine died in comparison with two deaths in the control group. More patients stated that they felt subjectively better in the procaine group. With the clinical criteria used this was not confirmed, as four of the control group showed improvement in comparison with two of the procaine group. None of these differences is significant statistically.

The subjective response of the patients after each three-course period is given in Table III. The number who subjectively improved in the procaine group remained constant throughout the trial, whereas the control group decreased. The numbers who became worse or died is very similar in both control and procaine groups.

TABLE III

	Control			Procaine		
No. of courses of injections ..	3	6	9	3	6	9
No. improved	9	6	3	6	6	6
,, stationary	7	8	8	9	7	4
,, worse or died	4	6	9	5	7	10

In addition to the eight deaths, two control and three procaine patients refused to continue the injections. The change in weight of the 27 patients who completed the trial is given in Table IV. An increase or loss up to 2 lb. (0.9 kg.) is regarded as stationary. More patients in the control group both put on and lost weight than in the procaine group, but this is again of no statistical significance. There is no evidence of procaine causing a gain in weight.

TABLE IV

	Control			Procaine		
	F	M	Total	F	M	Total
Increase ..	5	3	8	3	—	3
Stationary ..	2	1	3	4	3	7
Loss	2	3	5	—	1	1

It is concluded that there was no evidence of benefit in the procaine compared with the control group.

Discussion

This trial fails to confirm the claims of Aslan (1960). In the first group, consisting largely of examples of arteriosclerotic dementia, no benefit was recorded in 23 out of 24 patients given the treatment. In the second controlled series isotonic saline and procaine had little different end-result. There was no statistical or clinical evidence to favour procaine as a "rejuvenator."

Improvement after procaine injections is reported to occur after the first course of injections (Móra, 1960) or within a few months (Guidi and Scardigli, 1958). Parhon and Aslan (1957) state that within one or two months of treatment benefit may be noted. The trial carried out here lasted 12 months, and it would be thought reasonable to expect improvement over this period of time. In no case in the trial was it thought of any advantage to continue the injections after this time.

Many of the cases in group B classified as "improved" showed only minor degrees of change at the end of 12 months. Bearing in mind the advanced age of many of the patients it was felt that a minor degree of improvement was noteworthy. There was no example of marked improvement anywhere in this series in either group or any sign of rejuvenation.

In a group of aged individuals such as this it is important to look for evidence of prevention of physical and mental decline in the procaine-treated group. It might be argued that the maintenance of a stationary state represents a response to the drug in an aged infirm individual. The figures again do not show any significant difference in the two groups.

No side-effects due to procaine were observed, although several of the patients found the repeated injections irksome. A total of five patients refused to have further procaine injections because of this, or because they felt they were being made worse by them. After completion of the trial no patient asked for the injections to be continued.

The value of procaine in the elderly being accepted, several proprietary products include it in various mixtures of vitamins, rutin, and even cyanocobalamin (vitamin B_{12}) for parenteral or oral administration. We feel it is improper and hazardous to give cyanocobalamin to an elderly patient without proper haematological investigation and diagnosis. The addition of procaine to these preparations would not seem to have any therapeutic value.

Aslan (1957) cites several very aged persons who improved with procaine (including a man aged 107). In the case histories no mention is made of the subjects' social or environmental background. It is commonplace in geriatric practice to see the isolated or neglected patient improve greatly with hospital admission or day hospital attendances. This may be a possible factor, together with the psychological effect of an intensive course of injections, in providing an explanation of the rejuvenating action attributed to procaine. This category of patient also becomes extremely susceptible to suggestion in response to interest in their progress and improvement. Thus there may be other explanations of the benefit recorded in published series. This present trial did not record any significant benefit from injections of procaine.

Summary

A clinical trial of procaine injections in 44 elderly patients over the period of one year is reported.

With one exception, no demonstrable effect was noted in a series of 24 bedfast and incontinent demented patients.

A controlled trial with 40 elderly infirm residents in an old people's home showed no statistical difference between the effects of procaine and of saline injections.

It is concluded that procaine injections are of no value in these two groups of patient.

We are grateful for advice from Dr. K. W. Cross, senior statistical officer, Birmingham Regional Hospital Board, in planning this trial. We thank Mr. R. B. Knowles and the staff of the dispensary, North Staffordshire Royal Infirmary, for the preparation of the ampoules; and Dr. L. Bowcock, who took the clinical photographs. We are also indebted to the nursing staff who gave the injections.

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TRIAL OF PROCAINE IN OLD AGE AND CHRONIC DEGENERATIVE DISORDERS

BY

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Procaine hydrochloride (H3) has been claimed by Aslan (1960) to possess such remarkable rejuvenating properties when given to persons with degenerative disorders that it was felt a double-blind trial for a year was warranted, particularly as she also gave evidence which suggested that it had a favourable effect on the growth of tissue cultures and bacteria. A recent assessment in this country (Cashman and Lawes, 1961), though adequately controlled, was open to the criticism that the agent was given for only one month, whereas Aslan treated her patients for three months at least.

Procedure

Forty women aged 50 and over, 20 each from the long-stay wards of two chronic hospitals, were selected by two of us because of their poor general condition, as any change in this would be obvious, because they seemed likely to live for more than a year, and because their disease was stable.

The projected course of treatment and the nature of the experiment were explained to them, or their relatives if they could not understand. Only those who volunteered were accepted. Some, having read the newspapers, were most interested to take part. These patients were divided by the third member into two groups of similar diagnostic composition and average age (Table I). The choice regarding which received procaine and which the control injections of saline was made randomly by a fourth person.

TABLE I

Procaine Group		Control Group	
Age	Diagnosis	Age	Diagnosis
52	Disseminated sclerosis	50	Rheumatoid arthritis; cerebral haemorrhage (right hemiplegia)
59	Cerebrovascular disease; hypertension; Parkinsonism	67	Rheumatoid arthritis; Parkinson's disease
61	,, ,, ,,	67	Osteoarthritis of spine; generalized arteriosclerosis
63	Parkinson's disease	69	Diabetes mellitus
67	Cerebral thrombosis (right hemiplegia)	71	Cerebral arteriosclerosis (right hemiplegia)
67	Cerebral haemorrhage (left hemiplegia)	72	Disseminated sclerosis
68	Rheumatoid arthritis	76	Hypertension; senility
72	Cerebral arteriosclerosis; Parkinsonism	76	Senile dementia; hypertension
73	Cerebral arteriosclerosis; hypertension	76	Cerebral arteriosclerosis; Parkinsonism
73	Diabetes mellitus; hypertension; generalized arteriosclerosis	76	Cerebral arteriosclerosis (left hemiplegia)
78	Diabetes mellitus; hypertension; osteoarthritis of hips	77	Cerebral thrombosis (right hemiplegia)
78	Cerebral arteriosclerosis; hypertension; Parkinsonism	77	Senile dementia
79	Senile dementia; diabetes mellitus	77	Cerebral arteriosclerosis
80	Senile dementia	79	Senile dementia
82	Old carcinoma left breast	81	Senility; osteoarthritis of right hip-joint
84	Senile dementia	82	Cerebral arteriosclerosis
85	,, ,,	83	Senile dementia
85	Senility; duodenal ulcer	84	,, ,,
87	,, fractured neck of femur	87	,, ,,
91	Senile dementia	93	Cerebral arteriosclerosis

Sterile 5-ml. ampoules of 2% procaine hydrochloride at a *p*H of 3.3–4 and similar 5-ml. ampoules of normal saline at the same *p*H were prepared at the central pharmacy. These were randomly numbered so that they bore no relation to the procaine and control groups, and monthly supplies were sent to each hospital, so that those who administered the injections and those who assessed the patients did not know what was being given.

A questionary was prepared to assess the subject's mental and physical powers on a points system (Table II); this was done before the injections were started. The patients were weighed on accurate chair scales, care being taken to ensure that they were in the same clothes each time they were weighed. Their power of grip was tested with a sphygmomanometer cuff tightly rolled. A little air was pumped in and the manometer scale adjusted to zero by varying the tension on the cuff. The patient was then encouraged to squeeze the cuff as hard as she could, and only the sustained pressure was noted. This method was adopted because the majority of the patients could not use the normal type of grip meter.

TABLE II

		Points			Points
Bedfastness			*Intellect*		
Totally bedfast		0	Reads books and papers	Yes	1
				No	0
Ambulant with assistance	To chair only	1	Capable of understanding simple instructions	Yes	1
	To toilet	2		No	0
Ambulant		3	Capable of recognizing staff and/or relatives	Yes	1
Incontinence				No	0
Continent		4	Knowledge of day or week	Yes	1
Incontinent	Intermittent	2		No	0
	Continuous	0	Memory of date of birth	Yes	1
Emotion				No	0
Laughs cries, or rages inappropriately	Yes	0	Memory of last address	Yes	1
	No	1		No	0
Need of sedation	Yes	0			
	No	1			

Patients were given 5 ml. of the prepared solutions twice a week by intramuscular injection for 12 weeks, followed by 12 days' rest; then the cycle was repeated. This was continued for one year.

The assessment of the patients by the prepared questionary, weight, and grip was done once monthly and the report posted to the third member, who stored

TABLE III.—*Monthly Average Weight, Grip, and Points Scored*

Month	Procaine Group					Controls				
	No.	Weight		Power of Grip (mm. Hg)	Points	No.	Weight		Power of Grip (mm. Hg)	Points
		lb.	kg.				lb.	kg.		
0	19	115·8	52·5	68·4	7·7	20	111·1	50·4	49·0	7·0
1	10	96·4	43·7	72·0	5·6	10	107·9	48·9	28·0	4·3
2	19	116·2	52·7	73·6	8·3	19	112·8	51·2	48·2	6·1
3	18	114·4	51·9	57·3	7·6	17	115·3	52·3	49·3	5·8
4	18	113·1	51·3	49·9	8·2	15	116·7	52·9	42·5	6·7
5	17	110·7	50·2	59·8	8·5	14	122·5	55·6	56·4	6·9
6	17	111·1	50·4	58·1	7·9	14	121·5	55·1	60·3	6·8
7	16	110·2	50·0	46·6	6·3	13	122·3	55·5	45·0	7·1
8	15	108·3	49·1	57·6	7·7	12	121·3	55·0	44·3	6·7
9	15	109·6	49·7	63·0	6·3	12	122·4	55·5	51·6	6·9
10	14	106·3	48·1	52·1	6·9	12	121·4	55·1	49·2	5·9
11	14	106·5	48·3	64·6	7·6	12	121·7	55·2	47·1	6·5
12	9	94·3	42·8	46·7	4·4	8	105·7	47·9	42·5	4·4

them until the end of the experiment. Thus the observers had to make a fresh assessment each month. One observer was on holiday when the time came for the second set of observations.

Results

After one year the patients were separated into the two groups, and the average weight, grip, and points score calculated for each group monthly are given in Table III.

Twelve patients died during the investigation—five in the procaine group and seven in the control group (Table IV).

TABLE IV.—*Deaths*

Procaine Group			Controls		
Month	Age	Cause of Death	Month	Age	Cause of Death
3	73	Gangrene left leg; arteriosclerosis; diabetes mellitus	3	93	Congestive cardiac failure; ischaemic heart disease
			3	50	Cerebral haemorrhage
			3	77	Bronchopneumonia
			4	67	Parkinson's disease
			4	71	Acute cystitis; senile brown atrophy of heart; hemiplegia due to cerebral thrombosis
5	78	Coronary artery occlusion; ischaemic heart disease			
7	87	Hypostatic pneumonia	7	81	Congestive cardiac failure; ischaemic heart disease
			7	67	Bronchopneumonia
8	82	Congestive cardiac failure; hypertension			
10	59	Left lower lobar pneumonia; upper respiratory infection; paralysis agitans			

Summary

Twenty women patients aged over 50, suffering from various disorders, mostly of a degenerative nature, received procaine hydrochloride for one year, according to Aslan's technique. There was no evidence from this double-blind trial that these patients benefited from this therapy. There was no significant difference between the trend of this group and that of a control group of 20 similar patients.

Our thanks are due to Mrs. H. M. Hewines, late matron of St. Mary's Hospital, Launceston, Cornwall, and to Sister D. Wyatt, of the medical ward at Wolseley Home, Plymouth, and their staffs, who gave the injections and weighed the patients; and to Mr. L. H. Bryan, M.P.S., and his staff, who prepared the injection solutions.

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In response to a request from those responsible for the care of elderly people and invalids, the British Standards Institution technical committee, which recently revised the British Standard for cast iron baths (B.S. 1189), added a rectangular, shallow bath to the existing range of patterns. It is hoped that in future this type of bath will become a standard fixture in old people's residential and nursing-homes, and in dwellings built specially for the elderly. Copies of this Standard may be obtained from the British Standards Institution, Sales Branch, 2 Park Street, London W.1, price 6s. each. (Postage will be charged extra to non-subscribers.)

A CLINICAL TRIAL OF PROCAINE HYDROCHLORIDE

BY

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The postponement and the reversal of the effects of ageing have interested physicians for many centuries, long before the alchemists bankrupted themselves in the search for the elixir of life. It was therefore to be expected that Professor Anna Aslan's claims for procaine hydrochloride (Aslan, 1957, 1960) would arouse much interest. She described eutrophic and rejuvenating effects on all systems of the body, and, after treating 5,000 patients, proposed that it be dignified as a new vitamin—H3—its components, para-aminobenzoic acid and diethylaminoethanol, taking the names H1 and H2.

She visited this country in 1959 (*Brit. med. J.*, 1959a; Droller, 1960), and gave lectures which aroused much interest—lay, professional, and commercial (*Brit. med. J.*, 1959b)—and gave rise to some criticism (*Brit. med. J.*, 1959c) in that there were no satisfactory controls among her many cases.

It was felt that a properly controlled trial of this material was needed.

Design and Procedure

The generality of Professor Aslan's claims dictated the form of the trial as a strictly controlled double-blind, the basic criteria of assessment being purely clinical, although weight, haemoglobin, blood urea, and blood-pressure could be treated numerically as parameters of general health. It appeared from the literature that the serum cholesterol rose after two months' treatment (Droller, 1960).

The criteria for entry to the trial were: (1) all patients were in-patients of this unit, though some were later transferred to our halfway house; (2) the prognosis regarding life was at least one year so far as could be estimated; and (3) the patients' general and medical condition would be stable, or they would have been in-patients for at least one month, whichever was the longer. It was explained to each patient on entry that a new drug was to be used, which might or might not help him, and all agreed to collaborate.

On entry to the trial each patient was given a number which controlled his allocation to the treated or control group according to a sheet of random numbers which was held in confidence by the hospital pharmacist, who then dispensed an individually labelled bottle for each patient. The material used was a 2% solution of procaine hydrochloride in sterile water. An ampoule of Professor Aslan's material, supplied by Dr. Woodford Williams, showed no buffer on analysis, though Professor Aslan had laid some emphasis on a *p*H of 3 to 5 in various papers. Lüth (1960) confirms that she uses ordinary adrenaline-free procaine. The control material was sterile water. Intramuscular injections of 5 ml. were given thrice weekly for four weeks, with a rest period of 10 days between each course of 12 injections. Other treatment was given without reference to the trial, except that injections were avoided whenever possible.

On entry to the trial a full clinical examination was carried out, with particular reference to the condition of the skin and hair, and an assessment was made, in consultation with the ward sister, of general health, mobility, mental state, continence, and, in cases of arthritis, pain. Haemoglobin, blood urea, and serum cholesterol were estimated, and the patient was weighed. The serum cholesterol was estimated after each two courses.

Thirty-four patients entered the trial—18 controls (5 men and 13 women) and 16 treated (3 men and 13 women). The predominant condition affecting all patients to some extent was arteriosclerosis in its several forms, including cerebral thrombosis, Parkinson's disease, pseudobulbar palsy, and senile dementia, with, in addition, osteoarthritis, rheumatoid arthritis, osteoporosis, chronic bronchitis, and congestive cardiac failure. Multiple diagnoses are so common in this age-group that no purpose would be served by presenting a detailed list of diagnoses. Table I shows that the two groups were comparable in all respects on entry.

TABLE I.—*Treated and Control Groups*

	Treated Group (S.D.)	Control Group (S.D.)
Age in years	78 (9)	74·5 (10)
Haemoglobin (%)	95 (9)	93 (12)
Blood urea (mg./100 ml.)	35 (12)	39 (12)
Serum cholesterol (mg./100 ml.)	167 (50)	183 (31)
Weight (lb.)	116 (22)	126 (22)

Results

During the trial no unexpected improvement was seen in any patient, and some complained of pain after the injections. It was therefore decided to end the trial after six courses, though it had originally been planned to continue for a year with nine courses. It was later found that the painful injections had occurred equally in the two groups. Thirteen patients fell out before the end of the trial (Table II). One control left the district.

TABLE II.—*Patients Leaving the Trial Prematurely*

	Treated	Controls	Total
Died	1	3	4
Transferred to long-term psychiatric care	2	3	5
Intercurrent illness	0	2	2
Refused treatment	1	0	1

The demented patients showed no improvement up to the time of their transfer. The deaths in the controls were due to chronic bronchitis, carcinoma of the ovary, and pseudobulbar palsy. The treated patient was a frail, osteoporotic, and arteriosclerotic old lady, whose downhill course appeared to be unaffected.

At the end of the trial there appeared to be no difference in clinical state between the two groups (Table III); the haemoglobin, blood urea, serum cholesterol, weight, and blood-pressure were no different (Table IV), and no change in hair colour or density, or in skin colour and texture, was seen in any patient. Lüth (1960) and Aslan (1960) described repigmentation of the hair and increased turgor of the skin, which became firm and smooth.

TABLE III.—*Clinical Assessment in 21 Cases*

	Treated	Controls	Total
Deteriorated	0	1	1
No change	7	3	10
Improved	3	3	6
Much improved	2	2	4

It is concluded that under the conditions of this trial, which adhered closely to Professor Aslan's recommendations and continued for an adequate time, no benefit has been shown to follow the use of procaine hydrochloride.

TABLE IV

		Treated (S.D.)	Controls (S.D.)
Haemoglobin (%)	Before	95 (9)	93 (12)
	After	99 (11)	93 (8)
Weight (lb.)	Before	116 (22)	126 (22)
	After	117 (22)	132 (20)
Blood urea (mg./100 ml.)	Before	35 (12)	39 (12)
	After	42 (12)	47 (12)
Blood-pressure	Before	193/100 (34/14)	184/93 (27/13)
	After	191/99 (28/11)	186/99 (36/13)
Serum cholesterol (mg./100 ml.)	Before	167 (50)	183 (31)
	After 2 courses	191 (43)	170 (29)
	,, 4 ,,	193 (32)	183 (37)
	,, 6 ,,	161 (17)	152 (16)

The rise in serum cholesterol after the second course is not regarded as significant.

Discussion

In the assessment of a new therapeutic agent there are two points to be considered: firstly, whether it does in fact produce the effect claimed, and, secondly, whether any such effect is valuable enough to outweigh any disadvantages that may be found in clinical practice.

With regard to the first factor, this trial has added some suggestive negative evidence in the assessment of procaine hydrochloride. A negative is impossible to prove in this context, and it may be that a longer or a larger trial, with different or more precise measurements, might have shown some benefit.

With regard to the second factor, however, this trial has given a clear and unequivocal result. Twelve patients, each treated over eight months with 72 intramuscular injections, showed no detectable improvement. Long courses of injections are trying for patients, nurses, and doctors, and some of our patients were greatly relieved when these were discontinued.

It is concluded that there is no justification for the use of procaine hydrochloride in clinical practice as a rejuvenating agent, as the many disadvantages of this treatment are not balanced by any detectable benefit.

Summary

A double-blind trial of procaine hydrochloride has shown no detectable change in the treated group as compared with a control group. It is concluded that its use as a rejuvenating agent is unjustified.

I wish to thank Lord Amulree, without whose encouragement and support this work would not have been possible.

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The International Psychosomatic Cancer Study Group held its second international conference in Paris from August 27 to 29. About 30 representatives from 10 countries were present. A number of representatives from Eastern European countries were unable to attend because of the international situation. Copies of abstracts of the papers that were given may be obtained from Dr. D. M. KISSEN, Brookfield, Elm Walk, Bearsden, Glasgow.

Preliminary Communications

Erythrocyte Osmotic Fragility in Nigerian Infants and Adults

Fast-moving haemoglobin fractions which are present at birth and which disappear with the decline of foetal haemoglobin during the first few months of life have been reported by workers in several widely separated parts of the world (Fessas and Papaspyrou, 1957; Ager and Lehmann, 1958; Vella, 1959; Lie-Injo Luan Eng, 1959; Hendrickse, Boyo, Fitzgerald, and Ransome-Kuti, 1960). The significance of these observations is as yet obscure, and evidence of any correlation between the presence of a fast-moving haemoglobin component at birth and any physical, haematological, or biochemical abnormality in later life has to date not been forthcoming. Among the infants reported from the University College Hospital, Ibadan, who had fast-moving haemoglobin components at birth, two in whom osmotic fragility of the red cells was investigated showed a reduced fragility to hypotonic saline (Hendrickse *et al.*, 1960). Because of this observation it was decided to pursue the investigation of the relationship between the possession of a fast-moving haemoglobin component at birth and the osmotic fragility of the erythrocytes. The results of this investigation are reported here.

MATERIAL AND METHODS

Infants selected for study were those born at University College Hospital, Ibadan, on whom electrophoresis of the haemoglobin had been performed at birth and who were thus known to possess a normal electrophoretic pattern or to have an abnormal fast-moving component. Adults studied were healthy blood donors. Patients in whom haemoglobins S and C were detected were excluded from the investigation. Filter-paper electrophoresis of the haemoglobin was carried out with the hanging-strip method in barbitone buffer at *p*H 8.6, ionic strength 0.05. Erythrocyte osmotic fragility tests were done using the technique described by Jonxis and Huisman (1958). Results were read by measuring the extinction of the supernatant fluid in a spectrophotometer at 540 mμ. It was thus possible to estimate the median corpuscular fragility (M.C.F. 50% haemolysis). The tests were performed in an air-conditioned room in which the temperature was approximately 20° C. All tests were performed within two hours of collecting the blood samples and none of the samples were refrigerated.

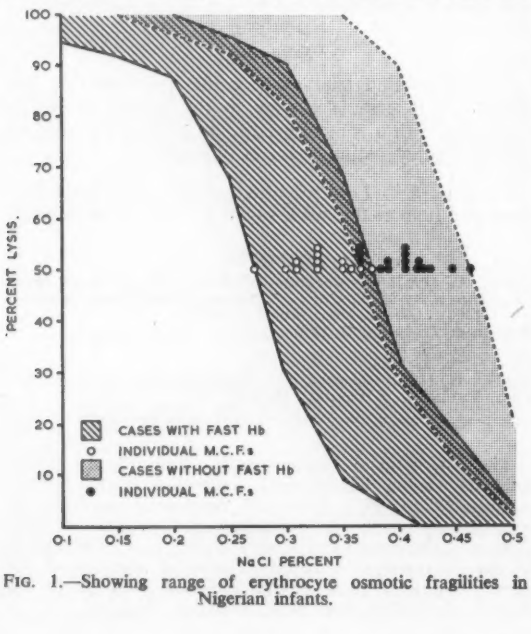

FIG. 1.—Showing range of erythrocyte osmotic fragilities in Nigerian infants.

Alkali-resistant haemoglobin was estimated by the one-minute denaturation method of Singer, Chernoff, and Singer (1951).

RESULTS

Fig. 1 shows the range of osmotic fragilities of the erythrocytes and the Table shows the M.C.F.s in the infants. It is clearly apparent that the range is different in the two groups. Cases showing an abnormal fast-moving haemoglobin fraction at birth were more resistant to hypotonic solutions. All the children in this group showed erythrocyte osmotic fragilities below the accepted normal range.

Comparison of Mean Corpuscular Fragilities of Erythrocytes in Normal Infants and Those Showing an Abnormal "Fast-moving" Haemoglobin During the First Two Months of Life*

Normals			Cases with Fast-moving Haemoglobin at Birth		
No.	Age when M.C.F. Estimated	M.C.F.	No.	Age when M.C.F. Estimated	M.C.F.
S.55	At birth	0·42	S.29	2 years	0·37
S.55A	,, ,,	0·45	S.53	At birth	0·38
S.60	,, ,,	0·41	S.76	,, ,,	0·30
S.62	,, ,,	0·37		1 month	0·32
S.64	1 month	0·43	S.38A†	6 months	0·25
S.72	At birth	0·38		9 ,,	0·27
,,	1 month	0·41	S.44A†	6 ,,	0·31
S.75	At birth	0·42	32918	9 ,,	0·37
S.77	,, ,,	0·39	34078	9 ,,	0·35
S.79	,, ,,	0·37	36732	9 ,,	0·35
S.80	,, ,,	0·41	33496	9 ,,	0·33
S.81	,, ,,	0·42	12828	2 years	0·36
S.82	,, ,,	0·41	44666	3 months	0·33
S.87	,, ,,	0·37	45665	3 ,,	0·33
S.88	,, ,,	0·39			
40281	2 years	0·46			

* Normal range = 0·40–0·445% (Jonxis and Huisman, 1958).

† Samples of haemoglobin from these patients taken at birth were examined by Dr. H. Lehmann with the help of Dr. J. A. M. Ager and were thought to contain the haemoglobin described by Fessas and Papaspyrou (1957). The findings in the cases have been reported in an earlier publication (Hendrickse *et al.*, 1960).

Case S.38A showed the lowest erythrocyte osmotic fragility in the series. Initially this case was thought to be haemoglobin genotype AA, as sickling was not detected for several months after birth and electrophoresis during the first few months revealed no obvious S haemoglobin. It has become apparent, however, that this child is in fact genotype AS, but the quantity of S is only approximately 25%.

Of 69 adult blood donors, 52 had erythrocyte osmotic fragilities within normal limits; eight were greatly reduced with a mean corpuscular fragility between 0.35 and 0.375% NaCl; and nine had intermediate results (Fig. 2). Alkali-resistant haemoglobin was estimated in five of the eight cases with greatly reduced erythrocyte osmotic fragility and was found to be less than 1% in all.

DISCUSSION

Approximately 10% of normal Nigerian infants show an abnormal fast-moving haemoglobin fraction at birth (Hendrickse *et al.*, 1960). Results of the present investigation indicate that these cases have a significantly reduced erythrocyte osmotic fragility. The observation that approximately 10% of normal blood donors have a reduced erythrocyte osmotic fragility in the same range as that observed in these infants suggests a relationship

between these two sets of observations. It has been demonstrated that destruction of erythrocytes in hypotonic saline solutions is apparently related to intracellular osmotic activity of the individual cells (Sharpsteen, 1955). If this is the case then our findings would seem to indicate yet another " abnormal haemoglobin " which occurs with appreciable frequency in Western Nigeria. The reduced osmotic fragility of the erythrocytes in a percentage of the local population is not related to an increase in the quantity of alkali-resistant haemoglobin, but current studies by one of us (E. J. W.-W.) indicate that it is in some cases associated with increased haemoglobin A_2 and other characteristics of thalassaemia.

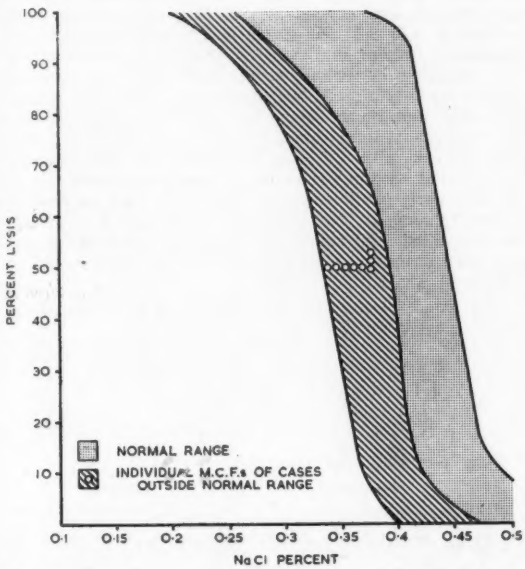

FIG. 2.—Showing range of erythrocyte osmotic fragilities in Nigerian adults.

SUMMARY

The osmotic fragility of the erythrocytes of Nigerian infants showing an abnormal fast-moving fraction at birth is appreciably lower than that of children with a normal electrophoretic pattern. The incidence of these cases is similar to the incidence of adult Nigerians with normal haemoglobin electrophoretic patterns but exhibiting reduced fragility of their erythrocytes, and suggests a relationship between the two observations. These observations might indicate yet another haemoglobin variant occurring in high frequency in Western Nigeria.

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Medical Memoranda

Deliberate Self-intoxication with Petrol Vapour

Cases of petrol-vapour poisoning that have been described in Britain are usually accidental. They are comparatively rare, in view of the universal use of petroleum (Ainsworth, 1960; Saxton, 1960)

The case described here is one of deliberate and repeated self-intoxication with petrol vapour over a lengthy period.

CASE REPORT

A girl aged 17, the adopted child of an elderly and respectable couple, was admitted into the women's hospital at H.M. Prison, Birmingham, for examination and observation, so that a medical report could be submitted to the court. She was charged with the theft of a watch and had been convicted of larceny on five previous occasions over a period of seven years. A medical report was requested because the police and her probation officer had noticed that she had at times behaved somewhat strangely.

Physical examination revealed no abnormalities. She suffered from mild chilblains, but otherwise was in excellent health.

She had no knowledge of her true parents and knew of no brothers or sisters. It appeared from the probation officer's report that she had been overindulged by her adoptive parents. According to her statements, she had been happy at home and had no complaints to make. She talked quite freely about herself.

Shortly after leaving a secondary modern school at the age of 15 she discovered that the inhalation of trichloroethylene vapour produced sensations which she found enjoyable. The trichloroethylene had been given to her for cleaning purposes by a friend who worked in a factory where the substance was used. When the supply of the trichloroethylene was exhausted she tried to obtain more, but failed to do so. She then struck upon the idea of using petrol as a substitute. It was obtained either as cigarette-lighter fuel or was taken from the tanks of motor vehicles. Her mode of inhalation was to dip a handkerchief or a piece of rag in a small quantity (usually about one teaspoonful) of petrol, warm it in her hand, and then inhale the vapour.

According to her description of the effects, she first began to feel drowsy. This drowsiness lasted, so she estimated, for about five minutes. During this time she had a pleasurable feeling of excitement and had " dreams." She could not describe these " dreams " fully, but they do not appear to have been erotic. However, she found them agreeable. This was followed by the onset of giddiness and an unpleasant nausea which terminated in an attack of vomiting. This vomiting relieved the nausea, and then she felt herself to be normal again.

During the period of two years she had inhaled petrol vapour three or four times every week. Rather surprisingly, it was a solitary indulgence and she had not told any of her friends about it. She knew of no other person addicted to the habit.

Eventually, however, it came to the notice of her parents and she was taken to the family doctor. Tablets were prescribed for her, but while pretending to take them she surreptitiously threw them into the fire, because, she said, she did not wish to be cured of the habit. The doctor also recommended that she should receive treatment as an

in-patient in a mental hospital, but she would not consider this suggestion as she did not regard herself as being ill in any way.

For about a fortnight after her reception into the prison hospital she complained that she missed the sensations produced by inhalation, but later she said that her desire for petrol vapour had passed away.

She showed no sign of mental illness and was of average intelligence. She expressed no regret for the behaviour which had brought her into conflict with the law, nor for the distress she had brought to her adoptive parents.

She was regarded as a psychopath who used the petrol vapour to produce elation: Isbell's "positive euphoria" (Isbell, 1955).

The court sent her to a probation hostel, where a watch was kept for any resumption of the habit. Two months later her probation officer reported that there was no evidence that she had recommenced inhalation. However, after a further two months she was arrested again, and confessed that she had once more been inhaling petrol.

COMMENT

Two points of interest arise from this case. The first is the lack of any toxic changes, in spite of regular inhalation of petrol vapour over quite a long period. The other is that this form of self-intoxication, which in the symptoms produced has some resemblance to the effects of alcohol, might well become popular among the unstable and the psychopaths. In view of the universal availability of petrol, control would be a matter of the greatest difficulty.

I am grateful to the Prison Commissioners for their consent to the publication of this article. It does not necessarily represent their views.

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Tuberous Sclerosis and Fetishism

Tuberous sclerosis is traditionally regarded as the triad of adenoma sebaceum, epilepsy, and mental defect. Critchley and Earl (1932) described a number of primitive catatonic schizophrenic reactions, but these patients were drawn from mental deficiency institutions, and, in general, psychotic or neurotic features in this disease can be regarded as medallions on a backcloth of mental defect. There are, however, a few reports of patients with average intelligence, and Kofman and Hyland (1959) described a case with obsessional and hysterical tendencies, while Kinnier Wilson (1954) supplies a few references.

Epstein (1960) in discussing the aetiology of fetishism postulates two factors: (1) a state of "increased organismic excitability," and (2) attempts to maintain "organismic control." He regards the former as being the more fundamental and a product of temporal lobe disturbance.

The following case report is of a patient who presented with both tuberous sclerosis and fetishism and whose intelligence was average.

CASE REPORT

The patient, a boy aged 14 years 9 months, was referred in January, 1960, because of aggressive behaviour and sexual aberration. He had in the past few months been taking his mother's underwear to bed with him and had been found masturbating with them. He was the elder of two (sister aged 11), had been slow in learning to walk and talk, had suffered from nocturnal enuresis till 9 years, and was generally withdrawn and apathetic and subject to bullying at school. He would at times retaliate with sudden bursts of violence, and on one occasion in 1959 he pulled a knife on a boy and was referred to a child guidance clinic.

On examination he was shy and difficult of access, with occasional grimacing and excessive day-dreaming. Thinking was retarded and occasionally blocked, and he was over-concerned with sex. He stated that he had often achieved orgasm by peeping into the girls' changing-rooms at school and indulging in various sexual fantasies. He expressed marked feelings of guilt over masturbation and was worried about his appearance, saying he looked less masculine than other boys. A provisional psychiatric diagnosis of early schizophrenia with fetishism was made. Physical examination showed adenoma sebaceum of butterfly distribution on the face, early papilloedema of both fundi, and on the right a large phakoma. No tumour of liver, spleen, or kidney was identified, and subungual fibromas, café-au-lait areas, and peau chagrine of the lumbo-sacral region were absent. The chest was normal.

The family history is presented in the accompanying genealogical table (Fig. 1).

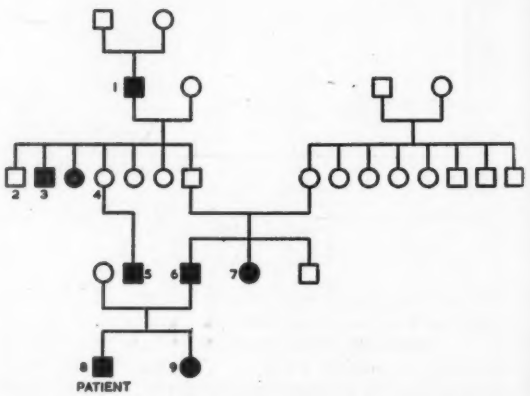

FIG. 1.—(1) Adenoma sebaceum. (2) Form of paralysis, nature unknown. (3) Form of paralysis, nature unknown. (4) Not abnormal. (5) Mentally defective, no evidence of tuberous sclerosis and not in an institution. (6) Marked adenoma sebaceum. (7) Died aged 20. Necropsy showed tuberous sclerosis to be present. Normal intelligence until time of death. (8) Patient. (9) Aged 11 years, suffers from epilepsy, no evidence of tuberous sclerosis, is of subnormal intelligence, and is showing behavioural disturbances.

Psychological Testing.—At the age of 14 years a school report had given him an I.Q. of 90. The Wechsler intelligence scale for children gave a performance score of 76 and a verbal score of 105. This test was done shortly after admission in April, 1960.

Murray's Thematic Apperception Test.—Twenty-one cards were completed. His responses indicated his general preoccupation with sex, his rich fantasy life, and his good intellectual level.

X-ray examination showed "a small focal area of mesenchymal dysplasia in the proximal phalanx of the left

thumb" and "a large skull with the pituitary fossa excavated and with digital impressions on the calvarium which suggested a long-standing rise of intracranial pressure and focal areas of calcification in the brain substance of the cortex."

E.E.G. report : "Disorderly rhythm with high-amplitude, slow, and sharp waves which affect the temporal areas particularly and were most strongly developed on the left side. The record was in keeping with epilepsy."

Ventriculography showed that the intracranial pressure was very high, with large ventricles. Xanthochromic fluid was present in the left ventricle, and its protein content was 1.6 g./100 ml. ; that of the right ventricle was 75 mg./100 ml. ; both ventricles were symmetrically dilated. The third ventricle was not enlarged. A tumour in the vicinity of

FIG. 2.—Coronal section of the brain.

the foramina of Monro was seen projecting upwards and forwards into the base of the frontal horns. The E.C.G. was normal.

The patient was admitted to hospital on March 31, 1960. Deterioration was steady, with increasing mental confusion and eventually stupor. He died on July 4.

Post-mortem Findings.—A single small cortical adenoma was found in the left kidney. The brain was swollen. On its removal a considerable volume of C.S.F. escaped from the infundibulum and the brain visibly decreased in size. The anterior poles of the temporal lobes were softened. There was severe symmetrical hydrocephalus of the lateral ventricles with considerable associated atrophy of the central white matter (Fig. 2). A tumour mass which obstructed both foramina of Monro lay in the floor of the lateral ventricles in proximity to the left caudate nucleus, near the point of attachment of the septum pellucidum ; it measured 4 by 3 by 2 cm. Throughout the ventricular system the ependymal granularity of tuberous sclerosis was pronounced. Superficial cortical nodules were not seen. *Histology.*—The tumour contained a few multinucleated bizarre giant cells in addition to very large astrocytes. Calcification and glial proliferation were present. The temporal lobes were normal, but the ependymal covering of the left caudate nucleus contained a small pleomorphic glial tumour with atypical cells and fibre-forming pilocytic astrocytes.

COMMENT

Although the temporal lobes on histological examination were normal the E.E.G. report recorded marked disturbance in those areas, particularly on the left side ; and the presence of the pleomorphic glial tumour over the left caudate nucleus may well have contributed to the "increased organismic excitability" and the psychomotor attacks. The relationship between epilepsy and fetishism has been described by Mitchell, Falconer, and Hill (1954). Also, the occurrence of temporal-lobe epilepsy with abnormal sexual behaviour has been noted by Davies and Morganstern (1960). Epstein's (1960) hypothesis derives some support from the findings in our patient, particularly with regard to the ease of sexual stimulation and orgastic achievement. The case also illustrates that a highly organized intellectual performance is consistent with tuberous sclerosis, but had the tumour not assumed malignant form the condition might have shown more gradual intellectual deterioration.

We are grateful to Dr. J. M. Jefferson for the E.E.G. report, to Mr. J. M. Small for the ventriculogram, to Dr. W. Thomas Smith for the pathological report, and to Mr. P. R. F. Clarke for the psychological testing.

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"In 1960 the Board of Governors of the United Oxford Hospitals decided that the future development of the teaching group should be on two sites rather than on five as at present. The two will be the Radcliffe Infirmary and a new hospital of approximately 600 beds to be built at Manor Road in Headington where the hospital owns 69 acres of land. The University welcomed this decision . . . and strongly urged that university departments should be sited both at the Radcliffe Infirmary and at the new hospital and that both should take their share in the teaching and service work of the group. With this view the Board of Governors is in agreement. Towards the end of 1960 work was started on the buildings for the Department of Pathology. No starting date has yet been reached for the anaesthetics and surgical laboratories and canteen building, nor is there any progress to report about the accommodation for the new lecture theatre at the Radcliffe Infirmary, or for the rehousing of the Nuffield Institute. In November, 1960, the Medical Committee of the University Grants Committee visited the Medical School. The Medical Committee expressed itself as pleased with what had been done in the previous quinquennium, and with the plans for the future, but was surprised that the clinical school was still not full and that it was little known in other universities. Steps are being taken to remedy the situation by wider advertisement of the school's activities and by the preparation of a brochure similar to that produced by other medical schools in the country." (Annual Report 1960, Committee for the Advancement of Medicine, *Oxford University Gazette*.)

Reviews

CIBA SYMPOSIUM ON SLEEP

The Nature of Sleep. Ciba Foundation General Symposium, Edited by G. E. W. Wolstenholme, O.B.E., M.A., M.B., M.R.C.P., and Maeve O'Connor, B.A. (Pp. 416+xii; illustrated. 50s.) London: J. and A. Churchill Ltd. 1961.

The nature of sleep was an apt subject for discussion at one of the familiar Ciba occasions. Only too often our knowledge of the physiology of natural sleep has been confused by phenomena of states of disordered consciousness artificially produced in laboratory animals by way of diverse techniques—surgical, electrical, or pharmacological. The illogicality of trying to correlate these experimental results with the phenomenon of the sleep–waking rhythm has thus been often forgotten.

Under the chairmanship of Sir John Eccles a symposium was held on June 27 to 29, 1960, at which papers were read by a number of distinguished investigators. No one who is even remotely interested in this fundamental topic can afford to ignore this published volume of proceedings. The various papers are printed in full and lavishly illustrated. The propriety of recording the verbatim discussion following each contribution is less clear, and even debatable.

It is invidious to pick out for particular mention one contribution rather than another. The first 200 papers are mainly devoted to "artificial" sleep, and the problem is really first grasped by Fischgold and Schwartz in their clinical, electroencephalographic, and polygraphic studies of sleep in the human subject. Of special interest are chapters by H. E. Lewis on sleep patterns on polar expeditions, and the contribution by I. Oswald, A. M. Taylor, and M. Treisman on cortical function during human sleep. H. Kleitman's study of the nature of dreaming is fascinating. The Finnish participant, Dr. Suomalainen, affords a very pleasing account of hibernation. Sir John Eccles, as chairman, gives an elegant summing-up of the proceedings.

The transactions of this symposium clearly show the need for a scientific and clinical appraisal of other biological activities, which though absolutely fundamental in character are only too often neglected. Thus further discussions might well be devoted to such phenomena as hunger, thirst, regulation of temperature, and pain.

MACDONALD CRITCHLEY.

AORTIC SURGERY

Surgery of the Aorta and its Branches. By James D. Hardy, M.S.(Chem.), M.D., F.A.C.S. (Pp. 386+xiii; illustrated. 52s.) Philadelphia and Montreal: J. B. Lippincott Company. 1961.

This excellent monograph by the professor of surgery at the University of Mississippi has been compiled from a recently published series of seven articles; the emphasis, therefore, is on recent advances. The book is of pocket size and admirable brevity—though there is a little repetition. The book is written in an attractive, concise style and divided into convenient paragraphs. There are useful summaries and long lists of references at the end of each chapter. As the title suggests the whole field of arterial surgery is covered. The omission of the coronary arteries is understandable, but it is surprising that there is no description of coarctation or its treatment. The fields of various specialists are touched on, and the book will interest many—most of all perhaps the physician, who may not always appreciate the value of surgery, especially early surgery in lesions such as strokes or peripheral emboli.

The signs and symptoms of arterial lesions are well described, and the differential diagnosis between these and nerve lesions is discussed. The value of arterial pulsation is stressed and the importance of palpation considered. Apart from the use of the sphygmomanometer there is seldom need for instrumental measurement, but arteriography is recommended for almost every case, with a small word of caution about aortography. Deliberately, no details of technique or of operations are given. The experienced surgeon will find the small, neat diagrams of great help; these are numerous, and a valuable supplement to the text. There are some adequate reproductions of arteriograms, and a few mediocre photographs of operations.

Symptomatic aortic aneurysms carry a prognosis as grave as malignant disease; treatment is now often possible. There is a first-class account of the management of abdominal aneurysm. Amputation of the leg for gangrene of a toe can no longer be accepted as standard treatment, for it may be possible to reconstitute the obstructed major artery responsible. The author recommends the use of synthetic cloth tubes, and no more than mentions homografts; such a tube may be employed as a temporary or permanent by-pass. He finds a considerable place for sympathectomy as ancillary or palliative treatment. Not all will agree that adequate sympathectomy for the upper limb must lead to a Horner's syndrome. Few English centres need share his fear of general anaesthesia.

A book for the postgraduate student, of interest to all clinicians, and for the reference shelf of the occasional vascular surgeon, its very up-to-dateness may mean it will soon be out of date.

M. MEREDITH BROWN.

VIRUSES AND THE EYE

Oeil et Virus: Viroses Oculaires. Manifestations Ophtalmologiques des Maladies Générales à Virus. By Roger Nataf, Piere Lépine, and Georges Bonamour. (Pp. 1,024; illustrated. NF. 140.) Paris: Masson et Cie. 1960.

The commissioned reports to the French Ophthalmological Society are surveys of existing knowledge rather than monographs presenting new work. The present survey on *Virus Diseases of the Eye* is among the best in the series, and is particularly welcome as the only other similar study, the one by Cavara and Bietti in Italian, is rather out of date.

Some 150 pages, contributed by Lépine, deal concisely and authoritatively with viruses in general. The succeeding 350 pages are devoted to the different affections of the eye that have been ascribed—with varying validity—to viruses. There is much here that is relatively new, such as Newcastle disease, chronic pseudo-membraneous conjunctivitis, and cytomegalic inclusion disease; much, too, that is well established; but there is also considerable material, such as the sections on spring catarrh and on the folliculoses, which could have been reviewed rather more critically. The particular merit of this study is the third part running to some 300 pages dealing with the ophthalmological

lesions in systemic virus diseases. A scattered literature is ably summarized here, the affections themselves being grouped under ectodermoses, neurotropic viroses, septicaemic viroses, endomesodermoses, and the adenovirus diseases. There is much matter here—both established and new teaching—that is not generally known. The final section of some 120 pages is a most helpful discussion on muco-membraneous ectodermoses, Behcet's disease, and the uveo-meningeal syndromes.

In spite of its forbidding title this book deals mainly with everyday problems; the approach is fresh, and the presentation is modest and pleasant. It is gratifying that the outstanding virus disease in ophthalmology, trachoma, can be discussed almost in historical terms, both from the point of view of aetiology and of treatment. The extensive bibliographies are in themselves most valuable.

ARNOLD SORSBY.

ORAL PHYSIOLOGY

The Physiology of the Mouth. By G. Neil Jenkins, M.Sc. (L'pool.), Ph.D.(Cantab.). Second edition. (Pp. 355+xi; illustrated. 40s.) Oxford: Blackwell Scientific Publications Ltd. 1961.

The rapid advance in dental science and the well-merited success of the first edition of this book, written primarily for the undergraduate student, is indicated by the publication of a second edition within seven years. There has been little change in the presentation of the contents; indeed, the chapter headings are the same as in the first edition. The great increase in the subject-matter reflects our increased knowledge of oral physiology during the last few years and includes the results of the most recent dental research.

The author has assumed that his readers have already acquired a general knowledge of physiology and biochemistry. He has therefore dealt in greater detail with the highly specialized structures of the mouth, and especially with the composition, formation, calcification, eruption, and resorption of the teeth, with saliva, and with dental caries.

The book is written in a precise and easily understandable style. The illustrations are adequate, and a nice balance has been achieved in the selection of references. Much of the subject-matter is still controversial, but the author has presented the evidence impartially. The book is well printed and bound in a handy form.

The second edition maintains the high standard of the first. It will continue to be one of the essential textbooks for the English-speaking undergraduate dental student. However, it also provides a ready source of reference for the dental research worker, the dental teacher and postgraduate student, and for physiologists and biochemists interested in fields allied to dentistry.

It is difficult to reconcile in one book the requirements of the undergraduate student and the research worker. Undoubtedly the subject-matter of this edition is fully ample even for the postgraduate student. This difficulty is likely to become more pronounced with the future growth of knowledge. The importance of a thorough understanding of oral physiology by the practising dentist would justify the publication of an additional abridged edition, written in a more dogmatic form and specifically designed for the needs of the undergraduate student.

J. L. HARDWICK.

T.V. AND NORTH AMERICAN CHILDREN

Television in the Lives of our Children. The Effects of Television on American Children. By Wilbur Schramm, Jack Lyle, and Edwin B. Parker. With a psychiatrist's comment on the effects of television by Lawrence Z. Freedman, M.D. (Pp. 324+vii. 32s. 6d.) Stanford, California: Stanford University Press. London: Oxford University Press. 1961.

This book reports the results of research on children's use of television and its influence on them in San Francisco, Rocky Mountain communities, Denver, and Canada. The authors found it necessary to carry their inquiry to Canada because they were unable to obtain for purposes of comparison a comparable group of children in the U.S.A. who were not exposed to television.

This research matches the report from the Nuffield Foundation by Himmelweit, Oppenheim, and Vince in 1958, which was concerned with a similar study in English children. The cultural background of the American children is a little different from ours, the programmes may vary, but the conclusions arrived at in these two careful inquiries are identical.

The American child spends more time in front of the magic box (teenagers average three to four hours a day), but their hours of sleep are not markedly reduced by viewing. Television enlarges the vocabulary and the social knowledge of young children but it impairs the academic performance of the older ones when it is heavily used. The fantasy needs of children are met by television, and while pathological behaviour may be encouraged in the susceptible child the ill-effects can be prevented in good homes. Most children are now and again frightened by television, but they enjoy excitement. Maverick gets the largest number of boys' votes and "77 Sunset Strip" tops the girls' poll.

Television, the authors conclude, is a new and important factor in the lives of children which must be accepted and not condemned, but it puts a special responsibility on parents, teachers, and broadcasters—a responsibility which has hardly yet been defined and certainly not met. They place the primary responsibility squarely on the broadcasters, and while they do not ask for the removal of the "bright crooks, the inadequate fathers, the unhappy mothers and the fast-draw experts" from the screen they insist that more could be done to improve the social and intellectual level of programmes for children without diminishing their entertainment value. They suggest, too, that teachers should make more active use of instructional television and that "how to view television" should become a regular subject in schools.

This admirable and comparatively inexpensive book has a useful and annotated bibliography.

D. V. HUBBLE.

SKIN DISEASES

Roxburgh's Common Skin Diseases. Twelfth edition. Revised by Peter Borrie, M.A., M.D.Cantab., F.R.C.P.London. (Pp. 505+xxiii; illustrated. 50s.) London: H. K. Lewis and Co. Ltd. 1961.

This excellent handbook has long been a favourite with medical students in this country, and this, the twelfth edition in thirty years, is evidence of its popularity. Dr. Borrie has rearranged and rewritten some sections to bring this work into line with modern thought, and many of the illustrations are new. Almost without exception they are good, but the poor photograph of a spider naevus does not justify the space of a whole page.

Clinical descriptions of disease are concise, accurate, and well presented, and treatment is dealt with in a practical fashion—matters of major importance to students and general practitioners.

I have, however, never liked the complicated parlour game by which the student is encouraged to approach diagnosis, and think this chapter detracts from the standard of this work as a contribution to medicine. It could well be omitted. Exception may be taken by some to the use made of the term dermatitis medicamentosa, to the statement that pigmented hairy moles never become malignant, and to the disapproval of the use of nystatin by mouth since it is not absorbed. But these are small points and the student will continue, wisely, to support this textbook. It is sad but inevitable that the modest cost has had to be increased a little.

J. T. INGRAM.

SPASTICS IN SCOTLAND

Cerebral Palsy in Childhood and Adolescence. A Medical, Psychological, and Social Study. Edited by J. L. Henderson, M.D., F.R.C.P.Ed. (Pp. 403+viii. 35s.) Edinburgh and London: E. and S. Livingstone Ltd. 1961.

Professor J. L. Henderson has edited an excellent survey by a team of eleven contributors on *Cerebral Palsy in Childhood and Adolescence*. The sub-title *A Medical, Psychological and Social Study* shows that the contents are comprehensive. The work owes its origin and support to the Scottish Council for the Care of Spastics. The research was conducted in the Eastern Hospital Region of Scotland and substantially financed by the Scottish Hospital Endowments Research Trust.

The six parts of the report deal with general considerations of the survey, the medical and surgical aspects of cerebral palsy, associated disabilities (with an excellent chapter on ophthalmological aspects), psychological and social aspects, aetiology, and a concluding section by the editor on conclusions and recommendations. Comparison of the survey results with those of other areas, at home and abroad, is interestingly made with discussion of reasons for differences (often due to terminology).

Miss June Cockburn deals admirably with the problems of education, and her section must be borne in mind when on p. 375 the reader is told that of all cerebral palsy children in the survey "one half are mentally defective." Possibly some of these are educationally subnormal, which at any rate does not sound so bad! This is a small quibble. The recommendations should be carefully studied by any group planning to start or improve a service for spastic children.

ALAN MONCRIEFF.

CENTRAL STERILE SUPPLY

Central Sterile Supply. Edited by Brian Watkin, S.R.N., B.Sc.(Econ.), Assistant Editor, *Nursing Times*. Foreword by E. M. Darmady, M.A., M.D., F.R.C.P. (Pp. 58. 4s. 6d.) London: Macmillan and Co. Ltd. 1961.

Syringe services are not new in Great Britain, but central sterile supply departments are. This booklet published by the *Nursing Times* describes a number of existing departments and discusses briefly the way in which they are developing. It will make interesting reading for those who want to know what central sterile supply consists of and for those who are contemplating setting up such a supply service.

There seems no doubt that central sterile supply is here to stay. Within the next few years it is going to modify hospital practice, and decisions on large and small matters will have to be made. It may be that one or two centres will provide for a region, as is planned in the Wessex scheme outlined here, or it may be that hospitals of a certain size will have their own department. Musgrave Park, Belfast, the first hospital in the National Health Service to have a C.S.S.D., was planned on this basis. The much greater American experience is not necessarily relevant to practice under the National Health Service. It will be some years before the best arrangements are devised, and particularly before there is reliable information as to cost.

R. A. SHOOTER.

PROBLEMS OF EPILEPSY

Les Manifestations Epileptiques. Part I. *Étude Analytique.* By Lucien Sorel. (Pp. 500; illustrated. FB. 500.) Louvain, Belgium: Editions Nauwelaerts. Paris: Béatrice-Nauwelaerts. 1961.

This, the first volume of an exhaustive survey of the problems of epilepsy, is concerned in the main with the relationship of diverse epileptic disturbances to the associated electro-encephalographic and anatomical disorders. These are dealt with in considerable detail and with accuracy. Dr. Sorel, who works in Louvain, then goes on to consider the patient with epilepsy, the factors which decide the onset of fits, their medical and surgical treatment, and the social implications of the disease.

The paper-backed monograph is the record of prolonged personal study rather than a survey of the existing literature, and the number of outside sources quoted is quite small. It is a work for the critical specialist.

DENIS WILLIAMS.

THE AIR AROUND US

The Air We Breathe. A Study of Man and His Environment. Edited by Seymour M. Farber, M.D., and Roger H. L. Wilson, M.D. (Pp. 414+xv; illustrated; £5 12s.) Springfield Illinois: Charles C. Thomas. Oxford: Blackwell Scientific Publications. 1961.

"If the great advances in medicine will be made in the study, not just of man, but of man in his environment, then obviously they will be made by medical research in co-operation with allied disciplines." This is how the preface to this book introduces the proceedings of a symposium held in San Francisco in 1960 to which doctors, physiologists, chemists, physicists, and sociologists contributed—they managed to demonstrate the value of such co-operation pretty convincingly.

The first section, on "The Normal Atmosphere and its Variation," provides useful accounts of past and present views on the composition of the atmosphere and speculations on the composition of the atmosphere of other planets. This is followed by reviews of reactions of the human organism to changes in temperature and pressure above and below sea level. These papers summarize present knowledge in a manner readily comprehensible by any doctor.

The second main section is concerned with air pollution in industry. Hatch gives a useful account of dust retention in the lungs, Mancuso discusses chemical irritants, and Newell discusses radioactive pollution of the atmosphere. The next section, on "Urban Living,"

deals with the nature and consequences of urban air-pollution. There is an interesting contrast here between the almost tortuous devotion to the complexities of the problem apparent in the American contributions and the more straightforward British approach described by Dr. Lawther.

The last two sections in the book are concerned with specific problems of disease. Professor Gough reviews the pathological effects of dust in the lungs; McIlroy and Nadel describe some recent investigations into the immediate effects of inhaled aerosols, including tobacco smoke, on pulmonary function; and Dr. Yaglou introduces a discussion of the possibility that "negative ions" may have therapeutic value. This proposition is unconvincing. The final section of the book is concerned with the aetiology of lung cancer. The contrasting views of Kotin, Hammond, and Berkson on the tobacco-smoking problem are here presented in interesting juxtaposition and are followed by a well-edited discussion. The discussions are well reported throughout and add considerably to the formal papers.

This book will provide an admirable source of reference for clinicians, epidemiologists, and public health officers on many of the effects of the environment on the health of people living in civilized communities.

This book is one which I enjoyed reading. I shall look forward to consulting it in order to find information on subjects which are scantily dealt with in standard textbooks of clinical and preventive medicine. The authors are to be congratulated on having edited and produced such an informative book so quickly.

C. M. FLETCHER.

BOOKS RECEIVED

Review is not precluded by notice here of books recently received.

A History of the Electrical Activity of the Brain. The First Half-Century. By Mary A. B. Brazier, D.Sc.(Lond.). (Pp. 119+vii; illustrated. 25s.) London: Pitman Medical Publishing Co., Ltd. 1961.

Diagnostic Cytology and Its Histopathologic Bases. By Leopold G. Koss, M.D., with Grace R. Durfee, B.S. (Pp. 380+xiii; illustrated. £6.) London: Pitman Medical Publishing Co., Ltd. 1961.

Human and Experimental Breast Cancer. By Georgiana M. Bonser, M.D., F.R.C.P., John A. Dossett, M.D., and John W. Jull, Ph.D. (Pp. 485+x; illustrated. £6 6s.) London: Pitman Medical Publishing Co., Ltd. 1961.

Practical Pediatric Dermatology. By Morris Leider, M.D. Second edition. (Pp. 437; illustrated. £5 2s. 6d.) St. Louis: The C. V. Mosby Company. 1961.

Microbial Cell Walls. By M. R. J. Salton. (Pp. 94+vii; illustrated. 28s.) New York and London: John Wiley and Sons, Inc. 1960.

Clinical Orthopaedics. No. 19. By Anthony F. DePalma. With the assistance of the Associate Editors, the Board of Advisory Editors, the Board of Corresponding Editors. (Pp. 307+xi; illustrated. 60s.) Philadelphia and Montreal: J. B. Lippincott Company. 1961.

Cell Heredity. By Ruth Sager and Francis J. Ryan. (Pp. 411+xi; illustrated. 60s.) New York and London: John Wiley and Sons, Inc. 1961.

Partition of Cell Particles and Macromolecules. By Per-Åke Albertsson. (Pp. 231; illustrated. 56s.) London and New York: John Wiley and Sons Ltd. 1961.

Drugs Affecting Lipid Metabolism. Edited by S. Garattini and R. Paoletti. (Pp. 604+viii; illustrated. £6 6s.) Amsterdam, London, New York, and Princeton: Elsevier Publishing Company. 1961.

Traité de Thérapeutique Chirurgicale. By J. Senèque. Volume 3. (Pp. 632+viii; illustrated. 102 NF.) Paris: Masson et Cie. 1961.

Précis d'Obstétrique. By Robert Merger, Jean Lévy, and Jean Melchior. (Pp. 914; illustrated. 65 NF.) Paris: Masson et Cie. 1961.

Immunity. By Sidney Raffel, Sc.D., M.D. Second edition. (Pp. 646+x; illustrated. $10.) New York: Appleton-Century-Crofts, Inc. 1961.

Facta, Non Verba. (Deeds, not Words.) By Major F. F. Rath Carrick, M.R.C.S.(Eng.), L.R.C.P.(Lond.). (Pp. 192; illustrated. 17s. 6d.) Devon: Arthur H. Stockwell Ltd. 1961.

Proceedings of the Fourth National Cancer Conference. Sponsored by American Cancer Society Inc. and National Cancer Institute, U.S. Public Health Service. (Pp. 774+xiv; illustrated. 75s.) Philadelphia and Montreal: J. B. Lippincott. 1961.

Poliomyelitis. Papers and Discussions Presented at the Fifth International Poliomyelitis Conference, Copenhagen, Denmark, July 26-28, 1960. Edited for the International Poliomyelitis Congress. (Pp. 435+xxiv; illustrated. 60s.) Philadelphia and Montreal: J. B. Lippincott. 1961.

Selected Papers from the Institute of Cancer Research, Royal Cancer Hospital and from the Royal Marsden Hospital 1959. Published by order of the Committee of Management of the Institute and the Board of Governors of the Royal Marsden Hospital, London. Volume 14. (Pp. 987+xxi; illustrated. No price.) London. 1961.

Handbook for General Practitioners. Index of Facilities for Mental Health Problems and the Care of the Chronic Sick and Aged. Third edition. By E. V. Kuenssberg. (Pp. 48. No price.) Edinburgh: Executive Council. 1961.

Though this be Madness. A Study in Psychotic Art. By Georg Schmidt, Hans Steck, and Alfred Bader. (Pp. 114; illustrated. 42s.) London: Thames and Hudson. 1961.

Essentials of Cardiology. By S. G. Owen, M.D.(Durh.), M.R.C.P.(Lond.), and J. Vallance-Owen, M.A., M.D.(Cantab.), M.R.C.P.(Lond.). (Pp. 215; illustrated. 25s.) London: Lloyd-Luke (Medical Books) Ltd. 1961.

Poisons and T.S.A. Guide. For Pharmacists in Retail and Hospital Practice. Sixth edition. (Pp. 78. 7s. 6d.) London: Pharmaceutical Press. 1961.

People in Hospital. By Elizabeth Barnes. (Pp. 155+xxiii; illustrated. 12s. 6d.) London: Macmillan and Co., Ltd. 1961.

Introduction to Neuroanatomy. By David Bowsher, M.A., M.D. (Pp. 110+xiii; illustrated. 15s.) Oxford: Blackwell Scientific Publications. 1961.

Tidy's Massage and Remedial Exercises in Medical and Surgical Conditions. Edited and revised by J. O. Wale, C.S.M.M.G., M.E., L.E.T. Tenth edition. (Pp. 600+vii; illustrated. 42s.) Bristol: John Wright and Sons. 1961.

Leitfaden für Bakteriologische Untersuchungen bei Tuberkulose. By Armin Krebs. Foreword by Johannes Kathe. (Pp. 186+xi; illustrated. DM. 16.50.) Jena: Gustav Fischer Verlag. 1961.

A booklet entitled *The British National Health Service*, which the Pharmaceutical Press (17 Bloomsbury Square, London W.C.1) has recently issued, admirably lives up to its subtitle—"A short survey with particular reference to the pharmaceutical services." In 20 pages it covers the main features of the service, presenting the facts without controversy. Though intended primarily for pharmacists it might help medical men visiting this country to learn something about the workings of the Service. There are some interesting reminders too: "Local authorities are specifically excluded from *employing* doctors and dentists at health centres for the purpose of providing general medical services or general dental services at the centres"; "Power to make charges for prescriptions was granted in 1949"; and the reason for Beveridge alone signing his report "was that all the members of the committee were civil servants, and it was thought that, as the report contained views and recommendations on issue of high policy, it would be inappropriate for them to sign it." The booklet costs 5s.

BRITISH MEDICAL JOURNAL

LONDON

SATURDAY DECEMBER 23 1961

DANGER OF PURGATIVES

Some critics believe that civilization, constipation, and cathartics carry a common denominator. Whether that is so or not, recent reports of severe illness arising from the prolonged use of cathartics are disturbing, for they describe the occurrence of muscular weakness, paralysis, and renal and cardiac failure. The danger signal was first raised simultaneously in the United States[1] and in Scandinavia[2] in 1953. In Britain B. J. Houghton and M. A. Pears[3] and also J. D. Aitchison[4] first drew attention to the serious effects that the abuse of laxatives can have, and in the last 18 months at least five publications[5–9] have appeared describing this disorder, many referring to more than one patient. It could terminate fatally if misdiagnosed or mistreated.

Briefly, the following events occur. As the sensitivity of the bowel to a particular purgative lessens the patient tends to take more until finally as many as 20 to 30 tablets or pills of a particular variety may be taken per day. Evacuations effected by laxatives are usually semi-liquid, and the liquid has a high potassium content (20–30 mEq/l.), usually 5 to 10 times the normal amount. In this respect it resembles diarrhoea fluid, but though potassium replacement in diarrhoeal diseases is well established the need for it in people taking laxatives regularly is seldom recognized. Continuous low serum-potassium levels are dangerous because they gradually lead to a depletion of the intracellular potassium, the latter being replaced by both sodium and hydrogen ions.[10] This in turn ultimately leads to interference with the state of excitability of the cell and the conduction of nerve impulses. Most severely affected are the kidneys, the heart, and the nervous system. When the serum potassium falls to 2 mEq/l. or below paralysis occurs. Complete quadriplegia has been seen,[9] though more commonly only the lower limbs are affected. As in periodic familial paralysis, the paralysis may begin centripetally,[3] though this is not invariably the rule.[9]

The order of progress of renal involvement is not yet quite clear, but some renal impairment can be demonstrated early in the disorder. This usually affects tubular clearance of substances like endogenous creatinine and para-amino hippurate without any sign of failure of potassium conservation.[3 11] The suprarenal glands are not primarily involved,[5] and the disorder differs from a potassium-losing nephritis. The latter, however, does occur as a late sequel and when pyelonephritis supervenes.[12] The electrolyte imbalance is also reflected in the electrocardiogram, which shows the characteristic changes associated with hypokalaemia.

With appropriate treatment—that is, replacement of potassium and the additional administration of sodium bicarbonate[3 13]—the patient's recovery is often dramatic and complete. The sodium bicarbonate is required to balance the hydrogen ions that now move from the intracellular to the vascular compartment; if omitted a serious fall in the serum-bicarbonate level may ensue.[3] On restoration of the serum-potassium level to normal, the patient's muscular power also returns and he may find his constipation spontaneously cured.

We owe the discovery of this disorder to the advancement in analytical technique and to the physician's greater awareness of the disorders of electrolyte metabolism and the need for serum electrolyte determinations. How many suffered and died from hypokalaemia caused in this way before the advent of the flame photometer nobody knows. What obviously saves most regular users of laxatives is their liberal diet of potassium-containing foods, notably potatoes. It is of interest, therefore, that this disorder occurs mostly in women in early adulthood who show strong psychoneurotic trends.[6] indulge in food fads, and suffer to some extent from anorexia nervosa.[4 5 6 9] They may continue to take laxatives surreptitiously after these have been withdrawn by the physician.[3 8] In men it is usually the elderly man who lives on his own on a restricted diet or who is afflicted with some intermittent bowel obstruction requiring laxatives and later surgical treatment. In every reported case the most

[1] Schwartz, W. B., and Relman, A. S., *J. clin. Invest.*, 1953, **32**, 258.
[2] Mårtensson, J., *Nord. Med.*, 1953, **49**, 56.
[3] Houghton, B. J., and Pears, M. A., *Brit. med. J.*, 1958, **1**, 1328.
[4] Aitchison, J. D., *Lancet*, 1958, **2**, 75.
[5] de Graeff, J., *Ned. T. Geneesk*, 1961, **105**, 200.
[6] Perrier, C., *Rev. franç. étud. clin. biol.*, 1960, **5**, 792.
[7] Siltanen, P., and Salminen, S., *Duodecim (Helsinki)*, 1960, **76**, 772.
[8] Conte, M., Malvezin, J., Fouet, P., and Goiffon, B., *Arch. Mal. Appar. dig.*, 1960, **49**, 956.
[9] Berning, H., and Fischer, R., *Dtsch. med. Wschr.*, 1961, **86**, 2153.
[10] Cooke, R. E., Segar, W. E., Cheek, D. B., Colville, F. E., and Darrow, D. C., *J. clin. Invest.*, 1952, **31**, 798.
[11] Relman, A. S., and Schwartz, W. B., ibid., 1955, **34**, 959.
[12] Kemp, J. A., Farrar, W. E., and Findley, T., *Metabolism*, 1961, **10**, 204.
[13] Owen, E. E., and Verner, J. V., Jr., *Amer. J. Med.*, 1960, **28**, 8.
[14] Drosdowski, M., Robel, P., and Sebaoun, J., *Presse Méd.*, 1961, **69**, 294.
[15] Paquet, C., *Northw. Med. (Seattle)*, 1960, **59**, 1515.

important thing in arriving at a diagnosis was the taking of a detailed history followed by a serum-potassium determination.

There is at present no evidence to suggest that the laxatives themselves—that is, their alkaloids—have any direct action on the production of this syndrome. Glycyrrhizin-induced potassium depletion invokes a different mechanism[14] and other iatrogenic causes of hypokalaemia are known[15] but not relevant to this discussion.

FLOUR "IMPROVERS"

The late Sir Edward Mellanby[1] showed that a toxic substance in bread made from agenized flour caused hysteria in dogs; it was later identified as methionine sulphoximine.[2] Now fifteen years after Mellanby's work this substance has been found to cause psychosis in man when administered in large doses. I. H. Krakoff,[3] of the Sloan–Kettering Institute in the U.S.A., gave it to seven patients with advanced cancer because experiments on mice had shown that methionine sulphoximine can augment the activity of two structurally similar compounds in retarding the growth of tumours.[4] Daily doses of up to 400 mg. were given to make total doses of up to 8.6 g. Four of these patients had "frank hallucinations, disorientation, and marked agitation which continued for from 1 to 3 days after administration of the compound was stopped." In one patient there were electroencephalographic changes, which were reversed when the methionine sulphoximine was removed from the diet. The toxic symptoms appeared to be induced more readily by sudden heavy dosing with methionine sulphoximine than by a prolonged intake of smaller doses. In one case it was found that the toxic effects of the poisoning could be prevented by the simultaneous administration of large doses of methionine. The effects of the methionine sulphoximine on tumour growth are not reported, but no benefit appears to have been derived.

Thus fifteen years after Mellanby's discovery of agene poisoning in dogs we have good evidence that the toxic agent can also cause poisoning in man. To complete the picture we may refer to a recent report by S. G. Impey, T. Moore, and I. M. Sharman[5] describing further feeding trials with dogs. As expected, dogs given bread "improved" by agene promptly developed hysteria. On the other hand dogs given bread made without any improving process or with improvement by chlorine dioxide, potassium bromide, ascorbic acid, or aeration remained free from fits. In this work only two meals including agenized bread, and containing a total of less than 2 mg. of methionine sulphoximine, were sufficient to cause severe hysteria in large dogs. This would correspond to a total dose of about 6 mg. for an adult man, which is some 200–300 times less than the minimum doses found toxic in Krakoff's patients.

Few people will regret the banning of agene even though the risk to man which was incurred by bread made with low concentrations of this improver remains an open question. In the same issue of this *Journal* in which Mellanby reported his discovery a leading article[6] appeared headed "The Menace of Bleached Flour." It referred to the possible risk to man and expressed some anxiety that about 90% of the flour consumed in Great Britain was agenized. On subsequent occasions the risk was again regarded as causing some disquiet.[7 8] But agene, too, had its supporters, both inside and outside the medical profession, with the result that eight years were to elapse before its use was finally discontinued[9] at the end of 1955. The U.S.A. took just under three years to reach the same decision.[10] Species vary in their susceptibility to agenized flour, rats and monkeys being about 100 times more resistant than dogs to the poison,[11] and studies of the effects in man[12 13] revealed no harm from wheat products treated with agene. But whatever the degree of the risk it seemed to many people an unjustifiable one to take. The fact that it is now only of historical interest should not lead to an excessive degree of confidence in the improving agents at present in use. Recent work[14] showed that rats on flour treated with chlorine dioxide grew more slowly than those on untreated flour, though it was suggested in these columns[15] that the use of this substance should be continued for the time being. But the recommendation of the Food Standards Committee[16 17] is worth stressing—"all bleaching and improving agents in use should be subject to well designed, long-term chronic toxicity studies."

[1] Mellanby, E., *Brit. med. J.*, 1946, **2**, 885.
[2] Bentley, H. R., McDermott, E. E., Moran, T., Pace, J., and Whitehead, J. K., *Proc. roy. Soc. B*, 1950, **137**, 402.
[3] Krakoff, I. H., *Clin. Pharm. Therap.*, 1961, **2**, 599.
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[5] Impey, S. G., Moore, T., and Sharman, I. M., *J. Sci. Food Agric.*, 1961, **12**, 729.
[6] *Brit. med. J.*, 1946, **2**, 903.
[7] Ibid., 1948, **1**, 350.
[8] Ibid., 1950, **1**, 295.
[9] Ibid., 1955, **1**, 38.
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[11] Gershoff, S. N., and Elvehjem, C. A., *J. Nutr.*, 1951, **45**, 451.
[12] Newell, G. W., Erickson, T. C., Gilson, W. E., Gershoff, S. N., and Elvehjem, C. A., *J. Lab. clin. Med.*, 1949, **34**, 239.
[13] Elithorn, A., Johnson, D. M., and Crosskey, M. A., *Lancet*, 1949, **1**, 143.
[14] Impey, S. G., and Moore, T., *Brit. med. J.*, 1961, **2**, 553.
[15] Ibid., 1961, **2**, 631.
[16] *Food Standards Committee Report on Bread and Flour*, Ministry of Agriculture, Fisheries and Food. H.M.S.O., 1960.
[17] *Brit. med. J.*, 1960, **2**, 1659.

THE PUBLIC HEALTH IN 1960

The latest report on the public health in England and Wales is not one to inspire complacency.[1] For the fourth year in succession the expectation of life at birth failed to improve, being 68 years for boys and 74 for girls. The infant mortality rate was slightly lower than in the previous year (21.8 per thousand live births), and the maternal mortality rate was also fractionally better —0.31 as against 0.32 per thousand live and still births. These figures in themselves of course indicate a remarkably healthy population, but the experience of some other countries suggests that they could be improved.

The birth rate at 17.2 per thousand population was the highest since 1948. Unfortunately the illegitimate birth rate rose again to 5.4% of live births. Apart from the war years 1941–6 a higher rate has not been recorded for nearly a hundred years. The Chief Medical Officer, Dr. G. E. Godber, calls attention in this his first report to the "seriousness of the increase" and says, "This is a part of the evidence of a change in the pattern of sexual behaviour in the young which must be a matter of serious concern, not merely because of the medical problems of too early motherhood or increasing incidence of venereal disease." The total of illegitimate births among girls aged under 17 rose from 887 in 1956 to 1,872 in 1960. The increase in venereal disease has recently been commented on in these columns.[2,3] The greater frequency of gonorrhoea is well known: Dr. Godber now adds that "syphilis increased sharply, especially in London, but it is now beginning to increase in other areas also."

Among other infectious diseases there were fewer cases of tuberculosis than in the previous year, the number 23,605 representing a fall of 12.9%. Mortality from this disease (3,435 deaths) showed a decline of 10.9% on the 1959 figure. But, Dr. Godber warns, "It would be a grave error to imagine that tuberculosis is yet defeated; it is more nearly under control, but it will cause many deaths and much illness in future and still requires strenuous efforts to hasten its final defeat." Clearly some restriction on the importation of the disease by immigrants is desirable.[4] The 49 cases of diphtheria with five deaths showed that this disease has not yet been overcome. Of the five patients who died four had no record of previous immunization though the fifth had had a primary course or reinforcing dose within five years. On the other hand 1960 was remarkable for the very low incidence of influenza, poliomyelitis, and typhoid fever

Among the main causes of death the incidence of lung cancer continued to rise. For men the rate quadrupled between 1940 and 1960, rising from 206 deaths per million population to 856. The comparable figures for women were 49 and 132. Writing of what he calls the "epidemic of cancer of the lung" Dr. Godber gives some data on Jersey: "The island records the highest male lung cancer death rate in the world as well as an exceptionally high rate for women. According to the reports of the Medical Officer of Health more tobacco per head of population is consumed in Jersey than anywhere else. There is no air-pollution problem and no case of lung cancer was recorded in a non-smoker during the years 1957–9." The death rate from leukaemia also continued to increase fairly steeply, though the actual numbers are relatively low (about 2,700 deaths). The death rate from cancer of the bladder rose slightly again.

The young registrar thinking about his future could do worse than look at the section in the report headed "Specialization in Hospital Practice," for it reviews the supply and demand of specialists in recent years. Pathology and child psychiatry stand out as needing more recruits. The demand in some of the understaffed specialties seems to be for more men "of the right calibre," "good men," "good trainees." But is this a problem affecting the whole of medicine and not only some of its branches?

[1] *Report of the Ministry of Health for the Year 1960*, 1961. Part 2. H.M.S.O.
[2] *Brit. med. J.*, 1961, **1**, 482.
[3] Ibid., 1961, **2**, 224.
[4] Ibid., 1961, **2**, 1624.

DIAGNOSIS OF VERTIGO

Vertigo is a most distressing and disabling symptom. It has a variety of causes, and perhaps the commonest is the virus infection (as it is believed to be) of epidemic vertigo. Small outbreaks are probably occurring at present.

In the diagnosis of a case of vertigo the first question to be asked is whether the patient's symptom is in fact genuine vertigo. In true vertigo the patient experiences a genuine sense of rotation or movement of himself or his surroundings and the symptom is commonly accentuated by movement of the head. But vague sensations of dizziness, of instability and unreality or detachment, or of swimming in the head do not constitute true vertigo. They can be due to conditions as diverse as vasomotor syncope, endogenous depression, the phobic anxiety-depersonalization syndrome, hypoglycaemia, and many more. True vertigo is invariably the consequence of organic disease. It is a common misconception that vertigo is an important presenting symptom of intracranial neoplasia. In fact even a patient with an acoustic neuroma rarely complains of vertigo, though it must be admitted that vertigo related to change in position of the head is an important symptom of those uncommon tumours such as ependymomas, and more particularly metastases, which are found in the region of the fourth ventricle.[1] On the other hand brief attacks of severe vertigo brought on repeatedly by a single stereotyped movement of the head in one direction usually implies a diagnosis of benign positional vertigo,[2] due to disease in the utricle and saccule. In Ménière's syndrome, by contrast, sudden attacks of vertigo, which vary considerably in severity and in duration (from a few minutes to several hours), occur repetitively at intervals of days, weeks, or months and are accompanied by

[1] Cawthorne, T., and Hinchcliffe, R., *Brain*, 1961, **84**, 415.
[2] Citron, L., and Hallpike, C. S., *J. Laryngol.*, 1956, **70**, 253.
[3] Pedersen, E., *Brain*, 1959, **82**, 566.
[4] *Brit. med. J.*, 1960, **1**, 1343.

tinnitus and deafness (which may at first be slight) in the affected ear.

These are, however, syndromes of recurrent vertigo, and diagnosis is more difficult in the patients suffering from single episodes of severe vertigo of sudden onset lasting for several days or longer. When in young patients this occurs as a symptom of multiple sclerosis signs such as facial weakness or numbness, increased reflexes, and extensor plantar response are commonly present, and the same is generally true in older patients suffering from disease of the vertebro-basilar arteries with ischaemia of the brain stem. For instance, in a patient with occlusion of one posterior inferior cerebellar artery there is often severe vertigo at the onset, but usually there are associated ipsilateral cerebellar signs, a contralateral hemianalgesia of the limbs and trunk, with or without dysphagia, and an ipsilateral Horner's syndrome.

Commoner than these is the disease known as epidemic vertigo or acute labyrinthitis or vestibular neuronitis.[3,4] Though it tends to occur, as the name implies, in small local epidemics, sporadic cases are also common. It is characterized by the explosive onset of intense vertigo with associated vomiting, retching, and prostration. While there may be tinnitus or deafness in one ear, this is uncommon. The patient is commonly confined to bed for one or more weeks, as any movement of the head produces a recurrence of symptoms and he often feels unsteady for several weeks when walking. Recovery is usually uninterrupted, though sometimes one or more relapses occur within a few months of the first attack. The cause is believed to be a virus infection, particularly affecting the second vestibular neurone and brain stem rather than the labyrinth itself. Treatment is largely symptomatic. Drugs of the antihistaminic group (dimenhydrinate, prochlorperazine, orphenadrine, and others) are helpful in controlling symptoms to some extent, and stimulant drugs such as amphetamine sometimes help to relieve the depression and lassitude which commonly occur in the phase of recovery. Fortunately when the diagnosis can be made with confidence complete recovery can be predicted.

SAFE COSMETICS

Elsewhere in this issue (p. 1700) we publish a report approved by the participants at a symposium held in London to consider the possible toxicological dangers of cosmetics and toilet preparations and how to avoid them. The symposium was organized by the European Committee on Chronic Toxicity Hazards ("Eurotox"). This committee, which was set up in 1957, derived its inspiration from an awareness of "various environmental factors that—under prolonged action—may endanger human health," and the participants in its annual symposia have been experts in the subjects under discussion, brought together on a voluntary basis and devoid, so far as possible, of national, political, or commercial allegiances. In the realm of practical toxicology one of the difficulties, as we have recently noted,[1] is a dearth of reliable evidence and informed opinion. The reasoned comments and carefully formulated suggestions of the European Committee therefore deserve close attention.

The ancients had their devotees (of both sexes) to paints, powders, and various other colourful and beautifying applications, but only in modern times has this practice become the *raison d'être* of a vast industry with a world-wide turnover estimated at probably more than £750m. per year. The materials now at the command of this industry are no longer limited to natural oils, plant extracts, and the like. Instead there is a multiplicity of synthetic chemicals, not always entirely innocuous and sometimes possessed of great inherent toxicity. Those that are obviously lethal are likely, in Britain at any rate, to become subject to the laws controlling poisons. The remainder—and that is to say the majority—may be used without restraint. This puts a very great responsibility upon the trade. Ointments and lotions applied to the skin, preparations designed to colour or wave the hair, or simply deodorants to make for social acceptability—some of these may be capable of causing severe local damage, especially with repeated use. Further, despite its general impermeability, the skin will allow the passage into the body of particular substances that may bring about distinct systemic changes. The sex hormones are an outstanding example. Finally, though far from being foods in the accepted sense, the constituents of dentifrices and lipsticks may be swallowed repeatedly, so that appreciable quantities of them may enter the alimentary tract and be absorbed. Given a sense of obligation to their customers the makers of cosmetics and toilet articles will no doubt take their responsibilities seriously. Unless it is obvious that they are failing to do so it is better that complicated statutory directions be avoided. The industry, however, may not always be aware of the hazards it is creating; hence the need for expert toxicological advice and guidance. The resolutions approved by the participants at the recent symposium are testimony to what a joint approach by industry and by medical and other scientific authorities can achieve. But this is only a beginning: exchange of ideas must continue, with agreement on policy in practical and sensible terms.

TRANQUILLIZING FIFI

Fifi is a hippopotamus at Whipsnade Zoo. If she had been of the opposite sex she could well have served as the model for T. S. Elliot's poem[1] "The Hippopotamus":

> The broad-backed hippopotamus
> Rests on his belly in the mud;
> Although he seems so firm to us
> He is merely flesh and blood.
> Flesh and blood is weak and frail,
> Susceptible to nervous shock. . . .

Fifi was certainly susceptible to nervous shock, for at the time this case history opens she was not only pregnant but hysterical and violently aggressive. An admirably matter-of-fact account[2] of how Fifi's

[1] *Brit. med. J.*, 1961, 2, 1411.

[1] *Collected Poems 1909-1935*. Faber and Faber Ltd., London.
[2] Graham-Jones, O., in press.

attendants met this large-scale psychiatric and obstetric emergency was recently given to the Zoological Society of London by Mr. O. Graham-Jones, veterinary officer to the Society. After explaining that during pregnancy captive wild animals may become temperamental and aggressive towards their companions and keepers, Mr. Graham-Jones added that their fear at parturition may upset the normal course of the three stages of labour. Maternal confusion in the post-parturient phase may also cause the animal to kill her infant, perhaps through over-solicitousness, or to adopt a violently defensive attitude, with consequent injury to herself, her infant, or her keeper.

Fifi was known to have a dominant personality and just those qualities that might lead to trouble during her pregnancy and afterwards. She charged her keeper at every opportunity, but though aggressive towards her mate Neville she practically wrecked her accommodation in distress at his removal when she reached term. Nevertheless when Neville was returned to her she could not overcome her aversion and attacked him so violently that he became paralysed and later died. At this stage the tranquillization of Fifi became a necessity.

The drug chosen was promazine hydrochloride. Nobody could approach Fifi to give her an ordinary injection, and projectile syringes were ruled out because of the noise of the gun. So oral administration seemed the only way, though, as Mr. Graham-Jones remarked, "there is little literature referring to the oral dosage rate of such a drug for a hippopotamus." Eventually, on the assumption that Fifi weighed 5,000 lb. (2,270 kg.), a daily dose of from 10 g. to 15 g. was administered (about 50 times the strength of a human dose). The powdered drug was always mixed with Fifi's evening meal. Mr. Graham-Jones did not discuss the possibility that part of Fifi's trouble may have been due to an unfulfilled longing for something dietetically *outré*, but she readily ate up her medicated suppers, and the immediate effect was that she allowed Neville's body to be removed without protest. The birth of her infant brought on another display of aggression, but an increase in the dose of promazine hydrochloride counteracted this, and she reared her calf without becoming noticeably jumpy. The happy ending of the story is that Fifi's entry into the outside paddock was uneventful, "and both she and her infant took to the water quite quietly."

A MYTHICAL FORAMEN

The foramen of Rivinus, a deficiency in the upper part of the tympanic membrane, is a feature still described in several modern textbooks as a normal variation. Surprisingly, arguments for and against its existence have been advanced for centuries. If it does exist it could be of clinical importance as a possible site of entry for keratinizing squamous epithelium in the development of cholesteatoma.

Recently A. Griffith,[1] whose death at a tragically early age occurred a few weeks ago, studied the literature of this controversy and concluded that reports of the foramen describe an artifact: "The accounts in present-day textbooks offer no new evidence to support the existence of the foramen and appear to be a perpetuation of a fallacious observation." As far back as 450 B.C., Griffith noted, Alcmaeon of Crotona declared that goats could breathe through their ears. He also found reports from later centuries that some people could make air whistle out of the ears on blowing the nose violently. It was in his inaugural medical dissertation *De auditus vitiis*, delivered at Leipzig in 1717, that A. Q. Rivinus described his dissections carried out in 1689 of the hearing organ in the calf and sheep. He illustrated a foramen in the upper part of the tympanic membrane, which he stated showed an open gap when a breath was sent through the pharyngo-tympanic tube but which disappeared when the breath ceased. A rod passed into the foramen was said to be gripped in a sphincter-like manner. Griffith refers to other anatomists who showed by various procedures that a passage exists through the tympanic membrane and also to the contrary opinions of Valsalva and Morgagni. At that time a direct view of the living membrane was impossible owing to the inadequacies of illumination, so that the controversy centred round specimens removed from the skull, which were apt to be in poor condition. Latterly technical advances have resulted in the production of the aural microscope: despite the careful examination of the membrane under magnification which this allows "no reports of the foramen in the recent literature are known." Nor could Griffith find trustworthy evidence of its existence from anatomical or embryological studies of the tympanic membrane or from a study of comparative anatomy. Consequently Rivinus's foramen looks like being another myth to be dropped from the textbooks when new editions are prepared.

[1] Griffith, A., *J. Laryng.*, 1961, **75**, 607.

DRINKING DRIVER'S REFUGE?

Amounts of alcohol far short of those that cause obvious drunkenness can impair a person's skill at driving. The special committee of the B.M.A. took the level of 50 mg. of alcohol per 100 ml. of blood as "the highest that can be accepted as entirely consistent with the safety of other road users."[1,2] But the difficulty of proving anything less than gross drunkenness in driver or pedestrian is well known, and the B.M.A. report concluded that the official returns underestimate "very considerably" the number of accidents due to this cause. The data reported by Mr. A. B. Cassie and Mr. W. R. Allan at page 1668 of the *Journal* bear this out. Estimations of alcohol in the blood of 239 drivers brought to hospital after road accidents showed that between mid-day and 6 p.m. 10% had a level of at least 50 mg. per 100 ml., between 6 p.m. and midnight the proportion was 33%, and from midnight to 6 a.m. it was 58%. Some of these drivers had levels of 100 mg. per 100 ml. Yet not one was charged with driving under the influence of drink. Why was this? Among the various possible factors the following suggested by Cassie and Allan deserves some thought: "It would seem that to a material extent, but unwittingly, the

[1] Report of a Special Committee of the British Medical Association, *Relation of Alcohol to Road Accidents*, 1960.

[2] See *Brit. med. J.*, 1960, **1**, 256.

hospitals have become a refuge for the drinking driver, and, rightly, clinical measures directed to recovery have taken precedence over chemical tests and police investigation. Yet where mutilation and death has occurred and a blood alcohol has soared, but is secret, public safeguards appear to be prejudiced and justiciary investigation of circumstances hampered by lack of authority to assess the alcohol factor in every case."

ANAPHYLACTIC SENSITIVITY AND THE BASOPHIL LEUCOCYTE

There is little doubt that histamine plays an important part in anaphylaxis and that the basophil granulocytes of the blood and the mast cells of tissues contain rich supplies of histamine. The question has naturally arisen whether these cells mediate the anaphylactic response by liberating histamine when stimulated, and there is already much evidence in favour of this view.[1 2] Recent reports by W. B. Shelley and L. Juhlin lend further support to the hypothesis. In a study of patients with cold urticaria[3] they showed by serial biopsy of the skin that the development of urticaria after local cooling was accompanied by progressive loss of granules from mast cells in the subcutaneous tissues. Moreover, when blood from these patients was cooled the basophil leucocytes showed a similar remarkable loss of granules, greatly exceeding that shown by control specimens from normal subjects. Passive transfer of cold sensitivity could be achieved with cell-free serum, which presumably contains a factor activated by cold and then capable of initiating release of basophil granules. Cold urticaria is of course rare, but the probability that swelling, loss of granules, and eventual disruption of tissue mast cells and basophil leucocytes were cytological changes associated with release of histamine led the authors to apply their technique for studying basophil granulation to the detection of anaphylactic sensitivities of a more general kind.[4]

In principle they set up a "miniature *in vitro* anaphylaxis system" composed of the suspected antigen and the patient's blood. The blood provides plasma factors and basophil leucocytes, and if sensitivity is present the action of the sensitizing agent on the plasma factors is believed to lead to depletion of granules from the basophil leucocytes as these cells release their histamine. Since basophil granulocytes are uncommon in the peripheral blood and are easily disrupted mechanically, a special technique for concentrating and preserving them was devised. This involved incubation of the patient's blood with the appropriate antigen for fifteen minutes at room temperature, fixation overnight in ice-cold chloroform–acetone–ethanol, and filtration through a cellulose membrane. Leucocytes were retained on the membrane and studied *in situ* after staining with toluidine blue. Test results were regarded as positive in a given subject if more than half his basophils, when exposed to the antigen, showed clear-cut depletion of granules, whereas less than a quarter of the basophils from a control subject tested in parallel showed such depletion. Positive results were obtained in each of five patients with a history of penicillin anaphylaxis, and in five of fifteen who had experienced urticaria possibly attributable to penicillin. Negative results were found in all of twenty control subjects who had previously had penicillin without clinical reaction. The test also gave positive results in patients who had developed anaphylaxis after exposure to cold, stings by the yellow-jacket bee, and prochlorperazine. The procedure is a little elaborate for routine use in predicting possible sensitivities, but it does confirm the central role of the basophil leucocyte in anaphylaxis and provide a new method for cytoimmunological research.

[1] Riley, J. F., *The Mast Cells*, 1959, E. and S. Livingstone, Ltd., Edinburgh and London.
[2] Kelsall, M. A., and Crabb, E. D., *Lymphocytes and Mast Cells*, 1959, Baillière, Tindall and Cox, Ltd., London.
[3] Juhlin, L., and Shelley, W. B., *J. Amer. med. Ass.*, 1961, **177**, 371.
[4] Shelley, W. B., and Juhlin, L., *Nature (Lond.)*, 1961, **191**, 1056.

BENEVOLENT ACTION

In the recently published annual report of the Royal Medical Benevolent Fund Dr. T. Anwyl-Davies, the honorary secretary, once again reminds us that only one-eighth of those on the *Medical Register* are subscribers to the fund, including those who send their gifts through the B.M.A. Thus the Fund has to rely on a dangerously low proportion of doctors to provide the money it needs to relieve the hardships which sudden or relentless misfortune can bring even to the most worthy. "It is not generally known," writes Dr. Anwyl-Davies, "what incredibly bad fortune and wretchedly poor circumstances some doctors and their families have to endure, for the privacy of our beneficiaries is carefully respected and the knowledge of their unenviable penury can be confidentially and safely entrusted to us." Grants distributed in 1960 amounted to £34,488, nearly £3,000 more than in 1959. In addition £14,197 was paid out in annuities.

The report outlines the various ways in which the Fund can be assisted. Gifts can be made direct at any time or through the B.M.A. (the annual form for renewal of subscription makes this easy), but by signing a banker's order the giver transforms his single generous impulse into something more enduring. Better still, if a seven-year covenant is signed the Fund can recover income-tax on the subscription paid: in 1960, when 233 new covenants were signed, the substantial sum of £6,500 was recovered in this way. Some medical men and women remember the Fund in their wills and more might do so without affecting the financial security of their dependants. Specific donations can be made to Westmoreland Lodge, the residential home for beneficiaries of the Fund. And gifts of clothing will be gratefully received by the Ladies' Guild of the R.M.B.F.

A few weeks ago Sir Zachary Cope, president of the Fund, urged readers of this journal to respond generously to the annual Christmas Gifts Appeal. Many no doubt intended to send a cheque but forgot to do so or found other matters too pressing. They could make up for this failure by deciding forthwith to support the Fund in one or other of the ways described above.

HAZARDS FROM COSMETICS AND TOILET PREPARATIONS

A symposium on the prevention of hazards from chronic toxicity of cosmetics and toilet preparations, the sixth of a series organized by the European Committee on Chronic Toxicity Hazards ("Eurotox"), was held at the Chester Beatty Research Institute, London, from October 30 to November 2. The participants,* from ten different countries, approved unanimously the following report.

General Considerations

It was recognized that the use of cosmetics and toilet preparations could contribute to the protection of health and improvement of wellbeing of the population, sometimes indirectly; the indiscriminate use of certain ingredients in cosmetic preparations could nevertheless endanger public health. The decision was taken beforehand to consider chronic toxicity in general, but to exclude sensitization and allergy, which would form the subject of a future symposium.

In these studies it was agreed that close co-operation between toxicologists and specialists in cosmetic science was highly desirable in order to obtain information about the substances employed and the condition of their manufacture and use. The participants look forward to this co-operation with industry being strengthened and maintained. In this first meeting it was obviously impossible to enter into details or to examine all product and ingredient groups. This report should be considered as an approach to the subject. A more extensive account of the meeting will be published in the *Journal of the Society of Cosmetic Chemists*.

The effects of long-delayed toxicity are difficult to detect in man. Even if only a small proportion of the population is subject to such hazards, everything should be done to avoid them. An incidence of cancer, for example, in a proportion of the population much lower than that which could be assessed by present biological methods, including both epidemiological and experimental, could still be serious. Although no cases of cancer have been directly attributed to cosmetics, it is better to prevent disease from chronic toxicity than to find out its cause in 20 years' time.

Control of Constituents

Control over the constituents of cosmetic and toilet preparations is one way in which the exposure to substances having delayed toxic effects could be reduced. The problem of control of these preparations is similar to that of food in general, but different in details.† In the field of food additives the principle of positive lists of suitable products is generally accepted. In cosmetic and toilet preparations the ingredients could be classified as suggested for the colours by the Deutsche Forschungsgemeinschaft Farbstoff Kommission Mitteilung 3 as follows:

C—Completely acceptable for use in any cosmetics, including those that are ingested (e.g., in lipstick or dental preparations).

C.Ext.—For external use only—not necessarily safe for ingestion.

W.R.—For use in washing and rinsing, or as a solvent or propellant, provided that the material has only transient application; not necessarily safe when ingested or remaining on the skin.

Classification should depend on the nature of the preparation and, more especially, its usage. The substances in class C which are completely acceptable should either be "generally recognized as safe" or have been approved after testing in at least two species of animal: for example, by feeding to rats over a period of two years *and* by skin application to mice for 80 weeks. Dogs may be useful for discovering toxic effects in short-term experiments, but appear to be unsuitable animals for the skin-testing of cosmetic ingredients, because dog skin is relatively impermeable or for life-span studies since they live for 15 years. Substances in the categories C.Ext. and W.R. may be controlled by negative lists. Products known to be harmful should not be allowed.

Substances already in use might be included in provisional positive lists, unless there is reasonable evidence that their use is harmful. As soon as possible the available information, including experience of human use, on these substances should be evaluated and further studies may be called for if the available information is not considered to be adequate to establish acceptability. A reasonable period of time, say five years, for the completion of further tests should be allowed. The evidence on the biological properties of *new* ingredients proposed for use in cosmetics should be evaluated and inclusion of the substances in appropriate lists should be decided accordingly.

Substances used in cosmetics should conform to appropriate specifications and standards of purity. Standards acceptable for food additives or pharmacopoeial preparations can be regarded as acceptable for cosmetic materials, although in some cases less stringent, although specifications may be justified.

Cosmetics present special problems of hygiene and health protection because of their frequent use (often daily), without any scientific or medical supervision. The possible hazards should not be considered in isolation but rather in conjunction with other risks, such as those of food additives and contaminants of air and water.

Resolutions

1.—The ingredients of cosmetic and toilet preparations, both in the pure state and as formulated, should be subjected to biological testing to ensure, so far as possible, that the use of such preparations would not constitute a hazard to health.

2.—Appropriate control measures are therefore necessary. The nature of these must depend on the particular ingredients in the cosmetic preparation, the uses to which it is put, and the population groups involved.

3.—In general, effective control can be promoted by the compilation of lists of substances that are considered to be either suitable (positive list) or unsuitable (negative list) for use in cosmetics.

4.—A positive list and/or negative list, whichever is most appropriate for the group of substances under consideration, should be compiled, after consideration of the available evidence, along the lines indicated in this report for the ingredients used or proposed for use in cosmetic preparations.

5.—Special measures, such as limitation of concentration used, specified conditions of use and/or labelling regulations,

*Participants: Mr. M. Ainsworth (Chemical Defence Experimental Establishment, Porton), Mr. L. T. Bowerman (Thomas Hedley and Co. Ltd.), Professor E. Boyland (Chester Beatty Research Institute), Professor C. D. Calnan (St. John's Hospital for Diseases of the Skin), Professor A. Castille (Louvain University), Professor Sv. Dalgaard-Mikkelsen (Afdelingen for farmakologi og toksikologi, Copenhagen), Dr. G. de Meuron (J. R. Geigy, S.A., Basel), Dr. J. H. Draize (Food and Drug Administration, U.S.A.), Professor H. Druckrey (Laboratorium der chirurg. Universitäts-Klinik, Freiburg im Breisgau), Dr. W. Eckardt (Bad Segeberg/Holstein), Professor A. C. Frazer (University of Birmingham), Dr. L. Golberg (British Industrial Biological Research Association), Dr. R. Goulding (Ministry of Health), Dr. M. R. Gurd (Boots Pure Drug Co. Ltd.), Professor A. Haddow (Chester Beatty Research Institute), Professor Dr. G. Hecht (Pharmakologisches Institut, Bayer-Werke, Wuppertal-Elberfeld), Dr. H. W. Hibbott (D. R. Collins Ltd.), Professor O. Högl (Service fédéral de l'hygiène publique, Berne), Dr. A. Lafontaine (World Health Organization), Dr. D. L. Opdyke (The Proctor and Gamble Company, Cincinnati), Dr. B. L. Oser (Food and Drug Research Laboratories Inc., New York City), Mr. J. McL. Philp (Unilever Limited), Apotheker I. Pintér (Institut für Ernährung, Budapest), Mr. C. Pugh (Beechams Group Ltd.), Professor L. Schmid (Vienna University), Professor R. Truhaut (University of Paris), Dr J. P. K. van der Steur (Unilever N.V., Rotterdam), Dr. J. G van Esch (Rijks Instituut voor de Volksgezondheid, Utrecht), M. Pierre Velon (Société Lancôme, Courbevoie), and Mr. J. B. Wilkinson (Unilever Limited).

†The evaluation of the toxic and carcinogenic hazards of food additives is considered in the second and fifth reports of the joint F.A.O./W.H.O. Committee on Food Additives (1958 and 1961). See also *Brit. med. J.*, 1961, **2**, 1411.

are needed for some substances that may cause unwanted side-effects.

6.—Substances that may be used for specific therapeutic purposes should, in general, be under medical control; the uncontrolled use of potent therapeutic agents, such as antibiotics and hormones, is undesirable.

7.—Adequate specifications and standards of purity of ingredients used in the formulation of cosmetic preparations, especially vehicles, solvents, and colours, are necessary to ensure the exclusion of harmful impurities.

8.—The plan of biological testing for each substance or group of substances should be decided by the responsible scientific investigator: nevertheless, some guiding principles as set out in this report that take account of the uses to which the cosmetic will be put should be considered.

9.—Cosmetic preparations, in general, are intended for adults, but there are some special preparations for children. Preparations for adults may also be used by children either accidentally or intentionally. Infants and children must be given special protection against toxic hazards.

10.—The possibility should be explored of establishing more effective human epidemiological studies in the field of chronic toxicity hazards that may attend the use of cosmetics.

Nova et Vetera

THE TRAVELLER LOOKS BOTH WAYS*

BY

DOUGLAS GUTHRIE, M.D., F.R.C.S., F.R.C.P.Ed.

To-day, on the 112th anniversary of his birth, we still think of Sir William Osler as a living force, 42 years after his death. A many-sided man, he was ever a traveller, and no armchair scholar. Montreal, Philadelphia, Baltimore, and Oxford were his homes in fairly rapid succession. He lived during a period of much significance for medicine; he saw the end of the Victorian Age and the beginning of the astounding changes in medical outlook which still surprise us.

Like the Roman god of doorways, Janus, from whom the first month of the year takes its name, he looked both backward and forward, a double outlook essential to everyone using a door.

Osler was the very personification of Janus. None knew better than he that one's range of observation should be wide, and that too close a concentration on the present had its disadvantages. In time, past, present, and future, and in space, the entire universe, were the fields of his activities. There have been many other medical Januses, looking both fore and aft, living in times of change and travelling from place to place. I should like to draw your attention to a few of them in this talk which I have entitled "The Traveller Looks Both Ways." There is a wide variety to choose from—Hippocrates and Galen, Vesalius and Paré, Paracelsus, Harvey, and many others—but I have selected three early travellers—Andrew Boorde, Jerome Cardan, and Pieter Camper—as worthy of our attention, though they are not among the most prominent figures in medical history. Boorde was the only Englishman of the trio. Cardan was Italian and Camper was Dutch.

Boorde and his "Breviary"

Andrew Boorde, sometimes written Borde or Bored (indeed, he used to call himself Andreas Perforatus), was born in 1490 at Cuckfield, in Sussex, where a house still bears his name. At an early age he became a Carthusian monk, but finding the discipline too irksome he wrote to his superior stating that he was "not able to byde the rigourosity" of such a religion, and begging to be relieved of his vows.

What the answer was we do not know, but he continued to sign himself "Andrew Boorde, Priest," and he went back to live at Charterhouse on his return from Montpellier, where he studied medicine for a year. At this stage he had the good fortune to attend the Duke of Norfolk, whose nieces Katharine Howard and Anne Boleyn became, in turn, Queens of England. This gained for him the friendship of Thomas Cromwell, who employed him more than once as an ambassador, or, rather, as a spy, in the course of his Continental wanderings.

Indeed, it was from his reports to Secretary Cromwell that we derive such knowledge as is available regarding Andrew Boorde's travels. His desire to see the world was strong, and he was, for a time, at the University of Orleans.

When crossing the bridge there one day he fell in with a party of nine English and Scottish pilgrims who were making their way to St. James' of Compostella in Spain. He told them that they would be better to die in England, saying that he would rather go five times to Rome than once to Compostella. They remained unconvinced, however, and he resolved to go with them. After great privations they reached their destination, but during the return journey they all died, one by one, the result of eating fruit and drinking water. Boorde, who had been more abstemious, found himself the sole survivor, and when he reached France he "did kiss the ground for joy."

Hardly had he set foot in England than he was off again, this time to ascertain for Cromwell the Continental opinion regarding the matrimonial affairs of King Henry VIII. It did not take him long to report that the King had few friends across the Channel. Our next news of Boorde is contained in a letter from Leith, Scotland, on April 1, 1536. He writes, "I am now in Scotland and at a little town named Glasco, where I study, and practise physick for the sustentation of my living."

Boorde had a poor opinion of the Scots; he regarded them as thieves and liars. "I, being there, was hated, but my physick did keep me in favour, and I did learn their secrets."

Although the University of Glasgow had been founded in 1451, there was no organized teaching of medicine, and Boorde's knowledge probably supplied a need, while in return he gained useful information which he transmitted to England.

After the Scottish tour he made yet another Continental journey which took him as far north as Denmark and as far east as Jerusalem. He then settled down for a time, about 1542, to write, at Montpellier, the books which are his chief memorial.

Of his later life there is no clear record. He practised at Winchester, and was at first highly regarded. Later he fell from grace, and, whether justly or unjustly

*An abbreviated version of the Oslerian Oration, delivered to the Osler Club of London on July 12, 1961.

we cannot tell, found himself in the Fleet Prison, where he died from gaol fever (as typhus was called) in 1599.

Andrew Boorde is remembered chiefly for his *Breviary of Health*—a sort of handbook of domestic medicine after the fashion of *The Regimen of the School of Salerno*. It is said to be the first book by a medical man written and printed in the English language.

The *Breviary* is a household dictionary, with more than 300 items for discussion.

Under the heading "Sleep" we read: "Seven hours is enough, and sleep on your right side with your head high, under a thick quilt and wearing a scarlet nightcap."

Boorde wrote a sequel to his book, and called it the *Dietary of Health*. It sheds an interesting light upon dietetics in his day.

From diet in health Boorde passes to diet in the sick-room. "A good cook is half a physician, and the chief physick doth come from the kitchen; wherefore the physician and the cook must consult together."

Besides his medical works Andrew Boorde has left us an account of his travels which is still well worth reading. It is quaintly entitled *The First Boke of the Introduction of Knowledge*. Written partly in prose and partly in verse, this guidebook describes no beauty spots or places of interest, but gives comments on the lives and habits of people of many lands, and on language and coinage, on food and clothing.

In Cornwall, for example, "the people can speak only Cornish; there is plenty of fish and tin, but the beer is beastly."

Scotland he described as "a Kingdom at one time subject to England, consisting of two parts, the best part of the realm, which is next England, and the north, consisting of barren moorland." At this point the writer reminds the reader that there is no land to compare with England. "I never did know as many as seven Englishmen who chose to live permanently abroad."

Boorde found France very pleasant, with well-dressed folk who delight in song and dance. Spain, on the other hand, was very poor. One must eat sardines and no meat.

This versatile and observant wayfarer must have been good company, and his remarks are always worth reading.

Cardan, the Mediaeval Consultant

The second of our trio of Janus-like wanderers, though ten years younger than Andrew Boorde, was a very different person, reflecting to a much greater extent the mystical and superstitious age from which the world was then emerging.

Jerome Cardan (1501–76) is usually regarded as a mediaeval physician; nevertheless he did look ahead in a very remarkable fashion.

He made no great discovery: his claim to immortality rests upon his interesting personality, his wide range of learning, and his reputation as an investigator of obscure secrets.

His name survives, or did so until recently, in the "Cardan shaft" of motor engineers, "Cardan's rule" in algebra, and "Cardan's Well" in Fife. He is mentioned in few histories of medicine; perhaps he was overshadowed by other giants of his time.

It must be admitted, however, that he sounded new depths in many sciences, and his *Collected Works*, published after his death, fill ten large folios. About one-third of the matter is of medical interest. Unlike Boorde, the details of Cardan's life are well known. He is the subject of two lengthy biographies (Morley in 1854 and Waters in 1898), while his autobiography *The Book of My Life*, written in 1575 and translated in 1931, is a strange document of self-revelation. His unhappy childhood, his early struggle with poverty, his attempt to live by gambling, his astonishing rise to fame as Professor of Medicine at Bologna and Pavia, his pathetic old age after his son had been executed as a murderer, and, finally, his death in Rome as a pensioner of the Pope are the headlines of this unusual career.

Cardan's wide and varied studies range from algebra to the subject he called "metoposcopy"—the study of lines and wrinkles on the face and forehead, after the fashion of palmistry or phrenology. The book was not published until almost a century after the death of its writer.

The masterpiece of Cardan's writings is *De Subtilitate*, which, with its sequel *De Varietate*, is a kind of household encyclopaedia, and at one time it was very popular. These "subtle truths" and "variety of things" include the raising of sunken ships, the marking of linen, signalling by torches, the origin of mountains, the twinkling of stars, how to catch mice, and how to make ink, besides a long dissertation on dreams and omens.

The book on algebra was perhaps his greatest work: medicine and mathematics were often combined then, as they are to-day. Cardan appears to have preferred science rather than art in medicine. "The doctor's calling," he wrote, "is completely servile, and so full of toil that I do not marvel that it used to be peculiar to slaves."

In spite of this rather unorthodox attitude towards the healing art Cardan became one of the leading physicians of his time, and he was the very embodiment of the peripatetic physician. This was clearly shown when he was summoned all the way from Milan to Edinburgh in 1552 to attend Archbishop Hamilton, Primate of Scotland and virtually the Ruler during the minority of Mary Queen of Scots. The Archbishop suffered from asthma, and his medical attendant, a Spaniard named Cassanate, informed Cardan, "He is worried night and day and can hardly breathe, and he eagerly desires your services."

Cardan reached Edinburgh early in June and proceeded to the Archbishop's country palace at Monimail, near St. Andrews, the tower of which may still be seen.

Being a wise physician, Cardan resolved to study the case for some days before expressing any opinion. Eventually he drew up a number of rules regarding baths, diet, exercise, and mode of life. The patient was advised to cough at certain hours with his head lower than his heels, a procedure which many years later was known as "postural coughing." His pillow and mattress were to be stuffed with straw or seaweed, and on no account with feathers.

All this has quite a modern flavour, but Cardan had not forsaken astrology, as he showed when he drew the horoscope of Archbishop Hamilton, predicting a stormy future but a long life. This was a fairly obvious conclusion, and the patient did enjoy much better health for some years. Cardan could hardly be expected

to foresee that the Archbishop would be hanged for treason 20 years later.

On his way home Cardan visited Conrad Gessner in Zurich, and when he arrived in Milan, covered with fame and fortune, he was given an enthusiastic welcome.

Despite his failings Jerome Cardan deserves to be remembered as a leading physician of Renaissance times whose life was full of extremes and contradictions, but who nevertheless sounded new depths in many sciences.

Camper, Artist and Obstetrician

The third and last of the Janus-like travellers whose deeds I have chosen to record did not make his appearance on the stage of history until two centuries later than Andrew Boorde and Jerome Cardan.

Pieter Camper, who was born at Leyden in 1722, came to study in London under William Smellie, at a time when midwifery was becoming a science. Camper, a clever artist, drew some of the plates which illustrate Smellie's famous *Treatise*.

Camper's three visits to England, in 1749, 1752, and 1785, are recorded in his *Travel Journals*, reprinted in 1939.

When Camper became his pupil, Smellie had already been established in London for ten years, having started his career by practising for 16 years in his native town of Lanark. Obstetrics had long been in the hands of midwives, and Smellie exemplified the new type of specialist, called "the man-midwife." He was unpopular with the surgeons, whose aid had been summoned in difficult cases, and, naturally, equally unpopular with the midwives.

Nevertheless Smellie was a successful teacher, and after the publication of his *Treatise on Midwifery* in 1752 he became the acknowledged leader of British midwifery.

On January 2, 1749, Camper writes, "I was accepted as a Member of the Painters' Academy in London," and three days later, "This morning I enrolled in Dr. Smellie's course on midwifery." He had arrived at Harwich on December 16, after a stormy passage of 60 hours, and had continued by coach to London.

To quote again from the diary: "7th Feb. 1749.—I was taken to Sir Hans Sloane, 87 years old, and hard of hearing, but well preserved. He lives at Chelsea, and has a famous collection."

On May 7 he "botanised at Primrose Hill with two other doctors," and on May 10 "sought herbs at Sydenham, a pretty village." Later he visited Oxford and Cambridge, and was impressed with Bath—the fine Abbey, the parade, and the ball-room, although, he added, "the baths were very bad."

Three years later Camper made a second journey to England. Now 30 years old, he was Professor at Franeker, and could travel only during the vacation. The main object of his visit was to make drawings for Smellie. He met Dr. Donald Monro, who told him that his father, Alexander Monro primus, had torn his tendo Achillis when dancing, and that Professor Plummer had also torn his.

Many years passed before Pieter Camper visited England for the third and last time. He now had a high reputation, having been translated from Franeker to become Professor of Anatomy and Surgery at Amsterdam in 1775. He continued to write, especially on the application of anatomy to art, and his later years were spent at The Hague, where he died in 1789. Four years before his death he journeyed to England in order to ascertain the attitude towards the operation of symphysiotomy, which he had practised with success in six cases. By that time Smellie and Hunter had been succeeded by Denman and Osborn, both of whom regarded the operation as "unwarrantable, though less dangerous than that most fatal operation, Caesarian Section." During this visit Camper spent much time at the British Museum, which he described as "a vast collection covered with dust."

He met John Hunter, who discussed with him the anatomy of the elephant, and Dr. Herschel, who took him to Windsor to see his large telescope. He travelled to Birmingham to see the engines of James Watt, and there he also met Dr. Withering.

On November 8, 1785, he was admitted a Fellow of the Royal Society when Sir Joseph Banks was President, and at this point the diary breaks off rather abruptly, as diaries sometimes do.

Conclusion

I have recalled to you the lives and wanderings of those three very different travellers, not merely as a tribute to their memory, which they all well deserve, but also as a stimulus to their successors to-day.

We are all travellers, in time if not in space, and it may be our good fortune, as we journey through life, to add to human knowledge or at least to supply one little stone or brick which may prove useful to someone engaged in building on a larger scale.

It is always helpful to reflect upon the travels of our medical ancestors; their ideals were much the same as our own, although their environment was so very different. Osler's students are now few in number, but those who know him only through his writings revere him as a great teacher, with many lessons for to-day.

There was much of the child in his gay optimism and keen humour, while he retained the priceless gift of child-like curiosity, so prone to fade in adult life. To this optimism and curiosity there was added the valuable asset which he called "Aequanimitas," a calm imperturbability in emergencies as well as a helpful attitude towards the unlovable, intolerant, and even aggressive patient who may sometimes seek our aid. Optimism, curiosity, and equanimity form a stable tripod upon which to base one's medical life and outlook; a happy assemblage of attributes for any traveller to carry in his haversack.

We who now ourselves stand like Janus in the doorway have reason to give thanks for these travellers of bygone days, and especially for William Osler and the noble ideals he so well embodied.

The Hong Kong Government has accepted Dr. Eileen Younghusband's Report on Training for Social Work, which she made after a visit to the Colony in August, 1959, as a basis for the development of social work training in the Colony. In her report Dr. Younghusband wrote: "It is generally agreed that all social work resources in Hong Kong are stretched to the limit, and that it will be essential to bring in social workers of standing from elsewhere in order to expand and improve training." She proposed that a team of three consultants should be invited to advise on social work, and the Hong Kong Government has accepted this recommendation.

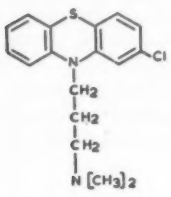
To-day's Drugs

With the help of expert contributors we publish below notes on a selection of drugs in common use.

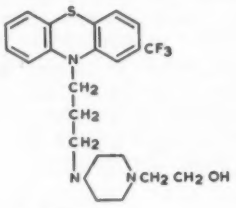
Fluphenazine

"Moditen" (Squibb).

Chemistry.—Fluphenazine is a phenothiazine derivative with its relationship to chlorpromazine shown by the following formulae:



Chlorpromazine



Fluphenazine

Pharmacology.—This drug is similar to chlorpromazine but has a greater tranquillizing action and less sedative effect. It is also a much more powerful antiemetic. It is notable in having a more rapid onset and a longer duration of action, which makes administration unnecessary more than once or twice in 24 hours.

Therapy.—(1) Relief of anxiety, tension, and associated symptoms in neuroses and in psychosomatic and physical disorders. The usual dose is 1 mg. once or twice daily. (2) Control of disturbed behaviour in schizophrenia, manic states, and organic psychiatric syndromes. The usual dose is 3–5 mg. daily.

Side-effects.—These are uncommon with daily doses up to 2 mg., but increase in frequency and severity on higher dosage, becoming frequent when the daily dose is 5 mg. or greater. Symptoms of extrapyramidal disturbance including Parkinsonism and dystonic reactions may be seen. Drowsiness and hypotension are common in patients on higher dosage range.

The following side-effects occur less frequently: blurring of vision, dizziness, sweating, nausea, muscular weakness, oedema, and leucopenia.

As with other phenothiazine derivatives fluphenazine is contraindicated when the central nervous system is already considerably depressed by sedatives, hypnotics, or narcotics. Caution is also called for in patients with a history of convulsive disorders in view of the danger of precipitating or aggravating epileptic fits.

N.H.S. Basic Price.—0.25 mg. tabs., 100 for 10s. 6½d.; elixir, 60 ml. for 11s. 2d.

A leaflet dealing with hypodermic injections has been prepared by the St. John Ambulance Association, under guidance from the Ministry of Transport, for use in connexion with first-aid instruction for Merchant Navy personnel. Instruction in hypodermic injections will in future form part of the syllabus in first-aid courses for officers of the Merchant Navy. Under existing arrangements it is necessary for candidates for Certificates of Competency as Master and Mate of any grade to hold as a condition of admission to the examination a recognized first-aid certificate issued by an Ambulance Association, or any other comparable authority.

Correspondence

Because of heavy pressure on our space, correspondents are asked to keep their letters short.

"A Pretty Ghastly, Awful Picture"

SIR,—The article by Dr. J. R. Searle, "Supply of Doctors" (December 9, p. 1554), and the leading article (p. 1548), were most enlightening. What a condemnation of the N.H.S. is this silent emigration of young doctors! They must have thought it not worth while even to protest about home conditions, nor could they have taken long to assess the N.H.S. and their future in it.

The bitterness engendered at the time of the Royal Commission on Doctors' and Dentists' Remuneration did much to speed many on their way and, with the machinations over the setting up of the Review Body at this moment, will not cause many to stop packing their bags. The Government must be an unattractive employer. The War Office cannot get regular doctors into the R.A.M.C., the Colonial Office cannot get doctors to enter the Colonial Medical Service.

Maybe we have a natural suspicion of any Ministry, possibly unfairly, but I don't think that the Ministry of Health with its succession of Ministers covers itself with glory. It certainly lacks any dynamic ideas and seems to make few suggestions that would improve or integrate the Service. It will be interesting to see in the future what the ratio of talking to action will be.

Those who have emigrated, and those who are emigrating, must consider that the ability to do good medicine according to their ideal and training, with what they consider to be adequate security and remuneration, exists only abroad. We work in a system that is, certainly in general practice, 50 years old, in hospitals that are in a large number of cases older, trying to perform scientific medicine for an ever-demanding and critical public, who by the very organization are prepared to accept little personal responsibility.

Good employers have contented staff who stay and give of their best according to their abilities. I cannot see our young doctors staying unless they can practise medicine in the manner they were taught, using all the aids of pathology, radiology, and ancillary help, without which they cannot fully help their patients. They must be given time to work and must be protected from the trivial—these are ideals we would all like to see. Will they ever be attained? Until they are, one-way tickets going West will be bought.—I am, etc.,

Wilmslow, Cheshire. A. H. LUSCOMBE.

SIR,—I am surprised that your leading article (December 9, p. 1548) has offered criticism of the National Health Service. This from the British Medical Association is almost sacrilegious. Let us give the National Health Service credit where credit is due.

I agree that the hospital on whose staff I have served for the past twenty years has fewer beds now than in the "bad old pre-1948 days." This is due to the closure of some beds to make way for further administrative offices. I agree that the out-patients have to be seen with the scanty help of Egyptians and a few teenage Trinidadians. I also agree that the waiting-lists for

admission to the hospital would have shamed the wicked voluntary system of the past. These are the unfortunate facts which cannot be disputed.

Let us look on the other side of the picture, however, and see what the National Health Service is really doing for us. Let us see what marvellous buildings they have built for their administrative staff and how much employment, often badly needed, they have given to some of our professional brothers. A fine example of their enterprise may be seen by visiting the colossus which houses the metropolitan regional board. There indeed is a monument to the National Health Service. Modelled on the lines of the United Nations building in New York and worth many millions of pounds, it dwarfs Paddington Station. Myriads of lights from its multitude of offices, waiting-rooms, and restaurants flash Christmas cheer until 5.30 p.m. This fine example should make us realize that the late Lord Horder was wrong in calling the National Health Service "a nothing for something scheme." How can we believe this when we see such fine homes for bureaucrats stretching to the skies?

When foreign surgeons visiting my drab out-patients' department are staggered by this deficiency I now know how to make them realize the marvels of the National Health Service. I have but to show them the palace at Paddington as a sample of the National Health Service building at its best. I feel sure that they will be duly impressed unless by chance one of them had the name of Parkinson.

Let us not forget also a further great achievement. The British United Provident Association and the Hospital Services Association have added an astronomical number of subscribers to their lists since 1948. These voluntary subscriptions stretch into many millions of pounds which are being paid in order to avoid "free treatment." These societies had a difficult time before the advent of the National Health Service and are now doubtless grateful for the immense fillip the Service has given to them.

No, at Christmas-time we should not carp about the National Health Service, but should give them full marks for what they have really done.—I am, etc.,

London W.1. R. ROWDEN FOOTE.

SIR,—Before we are completely mesmerized by masses of figures and words into accepting that we are heading towards a critical "shortage of doctors" (December 9, p. 1548), it is essential that we take a broader practical and unemotional view of the situation.

Accepting as a fact that we have in Britain about 110 doctors per 100,000 of the population and accepting that this figure may become a little less over the next few years, are we justified in passionate outbursts suggesting that this is all "a pretty ghastly, awful picture," and lamenting that it is due to our type of National Health Service? Is there a real "shortage" of doctors, or is it that they are just not being used to the best advantage?

Compared with countries such as Sweden, Norway, Finland, Denmark, and Holland—countries with high standards of living, extensive facilities for medical care, good medical education, and which each enjoy good, if not better, health than us—we have proportionately more doctors per caput of the population. Our surplus of doctors exists in both general practice and hospital fields. How come, then, that we in Britain are accepting our "shortages" so readily?

As far as general practice is concerned, I have made the suggestion[1] that perhaps we G.P.s are not working quite as hard as we think we are; alternatively, if we think we are, then there may be simple ways of easing our burdens. I know of no reliable figures to give us any idea as to how "hard" hospital staff work. No one has ever looked in close detail at the actual work being done by housemen, registrars, and consultants, to see if any of it could be carried out more easily.

Before we embark on an expensive and irrevocable expansion of the medical profession let us look more closely at what we are all doing and how we might do it better, with the same number of, or perhaps even fewer, doctors. At the same time detailed comparative studies are necessary to explain national differences as shown in this Table.

	Doctors per 100,000 Population	Annual per Caput Doctor-visits	Hospital Beds per 1,000 Population	Average Stay in General Hospitals (Days)	Annual General Hospital Admissions per 1,000 Population	Infant Mortality Rates (1958)
Sweden	80	2·5*	15	14	128	16
Great Britain	110	4·0	Over 10	16	85	23
U.S.A.	140	5+*	Under 10	7	130	26

*Personal communication from Professor Osler L. Peterson and Dr. O. Anderson.

From this it appears that Sweden is a very much healthier country with far fewer doctors. Why?—I am, etc.,

Beckenham, Kent. JOHN FRY.

REFERENCE

[1] *Pulse*, October 28, 1961, p. 3.

SIR,—The idea that medical emigration has contributed to our present shortage of junior hospital doctors and G.P.s has only recently gained support. Professors F. Lafitte and J. R. Squire did not consider it important last year,[1] and their paper[2] accepted the Army and export figures of the Willink report as accurate. Even the Royal Commission[3] concluded that the medical emigration rate was no higher than the general rate in spite of the fact that the evidence pointed the other way.

In a paper earlier this year[4] I showed that the medical emigration rate to Canada has been five times the general rate since 1955, and that the trend has been established for much longer than this. For example, there are now over 330 British doctors registered in British Columbia compared with only 35 in 1948. Almost a quarter of the medical registrants in this province are from Britain, and a further 36 were added last year. Information provided by the Department of Citizenship and Immigration in Ottawa and our own Board of Trade shows that there must be a net loss of between 400 to 500 doctors from the U.K. annually. The emigration to North America alone certainly exceeds the annual shortfall of 275 doctors estimated by Lafitte and Squire in their paper.[2]

Is it not reasonable to argue therefore that, if it were not for the excessively high emigration rate since the inception of the N.H.S., there would in fact be no shortage of doctors at all? The collection of more accurate and detailed figures about our medical emigration seems to be the next logical step rather than instituting a crash programme of medical school expansion. In my paper[4] I outlined how this informa-

tion might be obtained, and *The Times*[5] in a leading article gave support to my argument, and expressed some concern over the present position.—I am, etc.,

Worthing, Sussex. RICHARD H. DAVISON.

REFERENCES

[1] Personal communication.
[2] Lafitte, F., and Squire, J. R., *Lancet*, 1960, **2**, 538.
[3] *Report of the Royal Commission on Doctors' and Dentists' Remuneration (1957–1960)*, 1960. H.M.S.O., London.
[4] Davison, R. H., *Lancet*, 1961, **1**, 1107.
[5] *The Times*, May 20, 1961.

SIR,—Yes, what a pretty ghastly, awful picture (December 9, p. 1548) is presented in the present staffing of our N.H.S. hospitals. There seems little doubt that this lamentable state of affairs has come about because of the lack of security offered to a doctor who wishes to practise a specialty.

After the war doctors were willing to spend many years, working long hours for small reward, in the belief that they would eventually be given a permanent job in their chosen specialty. The majority have been disillusioned. They have been faced with the choice of general practice (for which they were inadequately trained), industry, emigrating, or marking time in a comparatively junior and insecure appointment. Those who emigrate do so because in such countries as Canada or U.S.A. the right of permanent employment in a medical specialty after a period of training is fully recognized. Those who hang on as registrars or time-expired senior registrars become bitter as they realize that more doctors are needed, not fewer, in order to treat hospital patients adequately, and that they themselves are often called on to do a great deal of work officially designated as "consultant." Yet, though their work is appreciated and their chiefs are very dependent on them, no one in authority really cares as to what becomes of this particular man once his term has been served.

Of recent years medical students and young doctors have come to realize this state of affairs and the majority are shearing off embarking on a long, weary, expensive road to a dead end, the ambitious few clinging grimly to the teaching-hospital lifeline which apparently offers the sole possibility of eventual success.

In retrospect one must blame this state of affairs on lack of comprehensive care and direction of newly qualified doctors. In other trades and professions if the apprenticeship is served satisfactorily there is reasonable assurance of a job suited to the skills of the person. This should be so in medicine too. There should be a complete and realistic revision of the establishment of hospital doctors needed to serve best the interests of the community, and this knowledge should reach every medical school and hospital in the country so that one would have some idea of the doctors needed in all specialties. After a stipulated one or two years in general house-jobs the young doctor wishing to work permanently in hospital should be advised whether or not he can be accepted for training in it. If so, after a further period of training recommended by senior members of each specialty he may perhaps be required to pass a further examination in it. Alternatively he could be judged competent or not on the standard of his work. Once he finishes this training period satisfactorily, his future in his specialty should be guaranteed by the N.H.S. If a scheme similar to this were put into being, I venture to suggest that there would be a dramatic change in the present problem of hospital staffing. In addition it is surely only right that some security should be promised to those willing to train for so long for something which the country really needs.—I am, etc.,

London W.C.1. K. A. HALLIDIE-SMITH.

SIR,—With reference to your leading article (December 9, p. 1548), if the 4,000 foreign doctors working in our hospitals were English and intended to stay in England and make their career here, what would be their future? What posts would be open to them? There may not be enough junior staff, but there seems to be very little room at the top.—I am, etc.,

Dartford, Kent. JOHN BARR.

Malnutrition in Old People

SIR,—In your annotation (December 2, p. 1486) you draw attention to an important aspect of preventable ill-health which exists in our community to-day. Preliminary investigations which we have carried out in homes for old people indicate that even if adequate food is provided the intake of certain nutrients may be low. Their diet for various reasons usually contains a high proportion of carbohydrate and is often deficient in protein. When the total calorie intake is low then the protein content is nearly always inadequate. Deficient food intake in itself leads to impairment of appetite, so that a vicious circle is established. Moreover, in frail old people temporary episodes of ill-health —for example, respiratory infections—may lead to a substantial reduction in food intake over several days.

We agree that the family doctor has an unrivalled opportunity of making useful contributions in this field. A serious difficulty exists in that our knowledge of what constitutes an adequate diet in old age is meagre. The dietary allowances recommended by the British Medical Association Committee[1] make no distinction between younger and older adults. The few dietary surveys carried out in the elderly population in recent years show that the intake of nutrients in old people often falls far short of the Committee's recommendations for "adults with sedentary work and little travelling," in which category the groups of old people investigated most nearly fit. The formulation of more appropriate standards is a matter of urgent necessity. —We are, etc.,

Whittington Hospital, London N.19. A. N. EXTON-SMITH.

BETTY STANTON,
Dietetic Adviser,
King Edward's Hospital Fund for London.

REFERENCE

[1] *Brit. med. J.*, 1950, **1**, 541.

SIR,—Prevention of malnutrition in old people could make a most important contribution to the well-being of the elderly. To achieve this end, during the last few years I have attempted to teach the elderly, by talks and demonstrations, something about nutrition. Recently I collaborated with Camera Talks in planning a film-strip which could be used for this purpose.

Many of the difficulties I encountered were due to gaps in our knowledge. For example, is the role of cholesterol worth mentioning, and will a diet containing a high proportion of vitamin B really prevent symptoms, and what is an adequate intake of vitamin-C-containing foods? These and many other questions are at present

unanswerable, and, although I hope the completed filmstrip will serve its purpose, its value is certainly lessened by our inability to deal satisfactorily with questions of this sort.

Your annotation "Malnutrition in Old People" (December 2, p. 1486), suggesting that more research is needed on nutritional studies of old people, is very timely. Our lack of knowledge of nutritional requirements in old people is something which should be remedied as soon as possible.—I am, etc.,

Civic Centre, Dagenham, Essex. J. ADRIAN GILLET.

Housing Problem

SIR,—Dr. Stuart Carne's report on the housing conditions of some of his patients (December 9, p. 1556) is timely and commendable. The medical profession could be of considerable help were it given the opportunity.

Unfortunately the public seems to think that a doctor's certificate carries great weight, while the housing authorities are inundated with these and must have great difficulty in distinguishing the real priorities, even after the certificate has been seen by a medical officer. For example, a patient recently told me that she had been welcomed at the housing office, as with my certificate they now had enough to paper the office.

If we are to take the housing problem seriously, it is time we abolished the impersonal medical certificate. I should suggest that the local medical officer of health or the divisional officer of the L.C.C. be given greater power of decision in this matter. They should only recommend rehousing for medical reasons after a domiciliary visit with the family doctor. They should be paid for this as any consultant is, and by seeing the situation at first hand with the general practitioner they could really assess the relative priority and be able to act accordingly. At present I believe it is possible to ask a medical officer of health to come on a domiciliary visit, but without the status of an official consultation and without its powers of action. The whole problem lies in the realms of preventive medicine, for many psychosomatic disorders must have at least part of their origin in what I should term the "housing situation."

The housing problem is a medical problem in many instances, and yet the general practitioner is powerless to help his patient.—I am, etc.,

London S.E.7. CYRIL FOX.

Munchausen Syndrome and the Courts

SIR,—You reported in your medico-legal column (January 7, p. 60) that a case of Munchausen syndrome was detained under Sections 60, 62, and 65 of the Mental Health Act, 1959. This is likely to have been the first time the Act was used in such a fashion. The further happenings in this case are of interest. St. John's Hospital, Stone, where the patient was admitted, was well known to the patient, as he had been a voluntary patient previously and had on his last admission been arrested, taken from the hospital, charged with, and convicted of, stealing a lorry. Prior to this present admission the learned judge heard from a consultant psychiatrist, who had treated the patient at another hospital, that it was likely that it would be necessary to confine him for at least five years.

Within ten days of admission he had applied to the Secretary of State for Christmas leave, which was of course refused. His behaviour in a closed ward was such that after two months and on trifluoperazine ("stelazine") it was possible to transfer him to an open ward. During the next 5½ months he was working in the hospital under supervision, always polite, but invariably requiring constant vigilance. Some 7½ months after being admitted to the hospital the Secretary of State agreed to allowing him home for a week-end and this unaccompanied, and he returned to hospital with nothing untoward happening. Two days later, however, he absconded and was apprehended in Jersey a week later, working, as was his wont, as a mortuary attendant and highly thought of by the hospital. Five weeks after his return to hospital, whilst being escorted to the cinema, he absconded. A week later he was returned from the north of England, having stolen a lorry and managing to get himself *x*-rayed at two hospitals which he had visited. Three weeks later, whilst in a closed ward, he managed to remove the sash of a toilet window, absconded, stole a lorry and £3,000 worth of goods, and wrecked the lorry in Perthshire.

Representations had been made to the Secretary of State after his first unauthorized departure, pointing out the difficulty of containing him and asking for his transfer to a special hospital. This was not agreed to at the time, but following his appearance in court transfer to a special hospital was authorized.

This case illustrates the lack of response to treatment (drugs, psychotherapy, leucotomy, institutional measures, etc.) of a case of Munchausen syndrome, and the difficulty of containing such a person in the mental hospital without special security measures. It is undoubted, however, that this man will become a valued member of some aspect of the life of the hospital to which he has been sent, but there will be a high wall round the hospital.—I am, etc.,

St. John's Hospital, Stone, Bucks. I. SHRIBMAN.

Geriatric Services

SIR,—The letters of Dr. Vera E. Claxton (October 14, p. 1020) and Dr. T. N. Rudd (October 28, p. 1151) illustrate that some general practitioners and specialists are alive to the problems of old age and chronic sickness and would agree that there are areas in urgent need of a review of geriatric services at present available. Since no adverse criticism has become apparent to which an answer is needed, I will venture to hazard some further views.

I have mentioned already (September 30, p. 893) my belief in the establishment of a national geriatric service along the lines of the present infant welfare clinics. To this I would add that a diploma in geriatrics be instituted, a course provided which would give experience in these subjects, and also that there be introduced what one might call an "intermediary clinician" in the medical services, who is not a specialist in the strictest sense of the word nor a general practitioner but who would work in close co-operation with both regarding geriatric cases.

As for the geriatric clinics, they could be of two types: (1) preventive, (2) remedial. The prototype of the former already exists at Teddington and from all accounts has been highly successful. My feelings, however, are more in favour of the remedial type, in order to cover what does appear to be a backlog of chronic sick and elderly, ever increasing and in need of more regulated care than is at present to hand. This care could be supplemented if necessary with regular

domiciliary visits by the same appropriately qualified person.

The problem immediately arises as to who would be responsible for these arrangements and who would do the work. First, the doctor responsible should be salaried and administered either by the regional hospital board or by the local authority, have special geriatric experience, and the right of choice of such a person be thrown open to both the specialists and the general practitioners in the area in which he is to work. Here again may lie the opening for the general practitioner with a higher degree who would wish to use it to his greater satisfaction, and who, we must all admit, at present receives little or no recognition.

Yet another factor which lends support to these suggestions is the overloading of some of the hospital out-patient departments with cases of chronic illness which have little claim to specialist advice. Some of these may be welfare problems, others have been sent up because of either a demand by the patient to be seen by a specialist or desperation on the part of the practitioner to know what else to do; hence the hospital becomes a high-powered disposal centre.

There must then be integration, implying interdependence, which in turn requires good will. Herein lies the solution, for unless the doctors themselves are prepared to withdraw from the present maelstrom of prejudice and individuality no system, however comprehensive, will succeed.—I am, etc.,

Chichester, Sussex. PETER R. T. WOOD.

Dangers of the Drug Cupboard

SIR,—The danger of the layman's drug cupboard with its collection of left-over tablets and drops has twice been brought to my notice recently. In the first case a man received a spark from a firework in his eye which he treated with some eyedrops which he had in his cupboard. Subsequently he found he could not see clearly with his injured eye: no wonder, as he had a large dilated fixed pupil due to using atropine. The second case was a lady who went to take an aspirin and inadvertently took a penicillin tablet which resulted in a severe sensitivity reaction and hospitalization. She knew she was penicillin-sensitive and yet she kept these tablets, which had been prescribed for her son three months ago, in an unlabelled bottle.

Are we prescribing too many tablets which enables patients to accumulate them, or is it that patients do not complete their course? Perhaps patients could be encouraged to return their unused drugs if general practitioners provided a drug-collecting box on the lines of a letter-box: or might a printed line on the dispenser's label provide a warning about the abuse of drugs? For example, "Return unused tablets to your chemist: their use without medical supervision is dangerous."—I am, etc.,

St. Mary's Hospital, London W.2. C. C. H. DALE.

"Early" Exchange Transfusion

SIR,—Dr. William Walker is to be congratulated on the excellent results recorded in his most interesting paper on the above subject (December 9, p. 1513).

With practical experience of the problems involved over a number of years, in a large maternity unit serving a population of 250,000, I am rather surprised to find great reliance still placed on haemoglobin estimations of cord blood as a basis for treatment, as often I have found them to be misleading. Instead, I have found the cord bilirubin test to be a much better guide to assessment of the severity of the haemolytic process and the need for exchange transfusion. Most babies of 5½ lb. (2.5 kg.) and over, with a cord bilirubin of 4 mg.% or less, and quite a number with values between 4 mg.% and 5 mg.%, do not require exchange transfusion. Babies with cord bilirubin comparatively low, perhaps even under 3 mg.%, will occasionally show abnormal rates of increase in bilirubin in the first few days of life, but this rise can be detected by tests at 6-, 10-, or 12-hourly intervals, depending upon the time of birth of the baby, and exchange transfusion carried out later if necessary. I agree with Dr. Walker that babies who have a later exchange transfusion generally tolerate the procedure better than those who are treated very soon after birth, before they have had time to recover from the distress of delivery, especially after surgical induction with "pitocin" (oxytocin) drips, etc.

If one accepts this statement, then I think it follows that probably more than 50% of the patients treated by Dr. Walker would have got by without an exchange transfusion. This form of treatment carries a definite risk of fatality or infection, even in the most experienced hands, and therefore I think it should be used only when absolutely necessary.

Haemolytic disease of the newborn is a fascinating study because of the many varieties of response in individual babies. In a large series of normal babies under investigation for so-called "physiological jaundice" I have shown[1] that a small percentage will develop bilirubin levels over 10 mg.% and I think it is these babies who, when affected by haemolytic disease, are liable to develop severe and dangerous degrees of jaundice.—I am, etc.,

Kingston Hospital, Kingston-upon-Thames, Surrey. A. A. CUNNINGHAM.

REFERENCE

[1] Cunningham, A. A., *Arch. Dis. Childh.*, 1959, **34**, 262.

Immunological Treatment of Choriocarcinoma

SIR,—The preliminary communication of Dr. Earle Hackett and Miss Margaret Beech (October 28, p. 1123) prompts us to report some preliminary immunological studies on patients with choriocarcinoma.

As pointed out by the above authors, Doniach, Crookston, and Cope[1] first attempted treatment of patients with choriocarcinoma by immunization with living leucocytes obtained from the patient's husband. The rationale of such treatment depended upon the tissue being a homograft of foetal origin and being sensitive to homograft immunity directed against the paternal homograft antigens. As explained by Dr. Hackett and Miss Beech it could be argued that if these conditions are fulfilled the tumour itself should be capable of stimulating a homograft reaction, and immunization by the husband's leucocytes might not effectively increase this response. In order to determine whether choriocarcinoma did stimulate the development of immunity in the patient we have examined the sera of three young women with choriocarcinoma, one with pulmonary, one with vulvar metastases, and the other with complete penetration of uterus by the growth. The method described by Walford[2] was used to detect the presence

of leucocyte agglutinins active against the husband's leucocytes. The serum of one patient proved negative and that of another gave a positive reaction with undiluted serum only. The third patient, Mrs. A., who had vulvar metastases, had antibodies against her husband's leucocytes to a titre of 1/32. This was a constant finding with several serum samples over the course of eight months. Her serum and her husband's red blood cells were ABO rhesus compatible. Her serum was also tested against a panel of twelve ABO rhesus compatible normal leucocyte donors from which one positive result was obtained to a titre of 1/4. Mrs. A. had had blood transfusions from four donors as part of her early clinical management. Her serum agglutinated the leucocytes of one of these donors and did so to the same titre as with her husband's cells.

Three possibilities arise: The first is that the antibodies may have been induced by transfusion and that husband and donor shared the same leucocyte antigens fortuitously. Iso-antibodies have been reported in some cases after multiple transfusions and previous pregnancy renders the patient more liable to develop such antibodies.[3 4] Secondly, the antibodies may have been induced by the previous pregnancy alone. This is known to occur much more often in multipara,[3 4] whereas this patient had only one child born six years previous to the present illness. The third possibility is that the tumour may have provided the antigenic stimulus. The reaction responsible for the rejection of homografts is generally believed to be of the delayed hypersensitivity type, and we looked for circulating antibodies in these cases merely as an indication of the occurrence of an immune response. In the case of Mrs. A. intradermal injection of small quantities of her husband's leucocytes on two occasions produced no reactions. Intradermal testing was not carried out in the other two patients as we wish to follow up the possibility of the development of circulating antibodies at a later date.

These three patients have survived for periods of over one year, one following total hysterectomy and bilateral salpingo-oophorectomy and the other two (including Mrs. A.) following surgery and repeated courses of methotrexate. If the tumour recurs in either of the two patients whose serum contained no antibodies active against their husband's leucocytes immunization with the husband's leucocytes may be considered. There is as yet no proof that such a procedure promotes resistance to the tumour. While the possibility of immunological therapy is of great interest it is of doubtful importance in this particular tumour in view of the favourable results with cytotoxic agents, and if considered at all should be given in conjunction with these drugs and not as an alternative treatment. It is these considerations which have prompted us to write, since no single group of workers is likely to gain sufficient experience in the treatment of this condition.—We are, etc.,

J. M. JACKSON.
J. R. ANDERSON.
D. GEBBIE.

Western Infirmary,
Glasgow.

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[3] Engelfriet, C. P., and Van Loghem, J. J., *Brit. J. Haemat.*, 1961, **7**, 223.
[4] Rood, J. J. Van, Leeuwen, A. Van, and Eernisse, J. G., *Vox Sang. (Basel)*, 1959, **4**, 427.

Carotid Pain

SIR,—I was interested to see Dr. J. V. S. A. Davies's article on carotid pain (December 9, p. 1528) and would like to report two further cases which are undoubtedly identical to those he describes. The first was a married woman of 32 who, during her second pregnancy, experienced for ten days a severe pain and great tenderness over the right carotid bifurcation which was definitely dilated. She has had four similar but less severe attacks during the subsequent four years, in at least one of which the right side was involved. The second case was her husband, who has experienced in the last three years three identical attacks with pain, tenderness, and swelling at the left carotid bifurcation. None of the attacks lasted longer than ten days, in none were there constitutional symptoms or fever, and no sequelae have been noticed. That on one occasion attacks occurred at the same time in both husband and wife was a curious and confusing factor. Both patients have had migraine in the past.

That the carotid swelling may be mistaken for an enlarged and tender tonsillar gland may be one reason for the rarity of reports of the condition.—I am, etc.,

London S.W.1. JOHN ALLISON.

Nurse-training Schools

SIR,—The General Nursing Council, as a result of their ruling that only hospitals of 300 beds can have a State registered nurse-training school, have recently made proposals to withdraw recognition of the Wimbledon and Nelson Hospitals as a training school for State-registered nurses. In the unanimous opinion of the St. Helier Group Medical Advisory Committee and of the Wimbledon and Nelson Hospitals Joint Medical Staff Committee this is a wrong decision, which will result in deterioration of the hospital services in the area. Unfortunately at the moment the decisions of the General Nursing Council are not subject to any medical approval before implementation, and it appears that, although they control only an ancillary service of medicine, they have the final and absolute say regarding the future of our hospitals.

We feel that this is a problem which may be presenting itself all over the country and causing grave concern to medical practitioners everywhere, both specialist and general, who work on the staffs of small hospitals. The policy of the G.N.C. has already been a factor in the serious falling-off in nursing recruitment and must inevitably lead to both reduction in the number of beds available for hospital cases and a lowering of the standard of work done in these hospitals.

We feel that it is of the utmost importance that the decision of the G.N.C. in regard to this and other nurse-training schools should be reversed, or at least delayed, and we would be most grateful if the chairmen of medical staff committees of other hospitals who now find themselves in a similar predicament would communicate with the last of the undersigned at once so that a united effort can be made to preserve the hospital service.—We are, etc.,

C. P. PETCH,
Chairman, Group Medical Advisory Committee,
St. Helier Group Hospital Management Committee.

P. M. KELLY.
B. W. WELLS,
Chairman, Joint Medical Staff Committee, Wimbledon and Nelson Hospitals.

Nelson Hospital,
Kingston Road,
Merton,
London S.W.20.

Economical Use of Nursing Ability

Sir,—I appreciate Dr. W. Ritchie Russell's criticism (December 9, p. 1569) of my letter (November 25, p. 1429), for it is exactly what I might have written before I attended the six 3-hour sessions of the nursing conference, the whole aim of which was to secure, just what he and I want, that the patient and his needs shall be fully met. Like him I too might blame the General Nursing Council, in spite of their excellence, for arrangements in the nursing curriculum, but is it not also true of our own where the houseman has to learn most of the practical care of patients from sisters and nurses ?

But a return to the old ways is not the answer. First of all girls of to-day will not have it, and secondly it was the continual plaint of the sisters at the conference that they were so taken up with other duties that they had no time to do their proper teaching of younger nurses in the wards, as they all said they wished to do. From many of these duties they can only be freed by the understanding and co-operation of the medical staff. For example one sister told of how she had five honoraries on her ward, all of whom wanted her constant attendance as long as they were there, though one consultant said that he would often be happy with only a staff nurse or even a "pro." We heard of a case where a patient had his blood pressure taken by a nurse every half hour for 36 hours until it was found out that this had been ordered by an anaesthetist who had not said how long it should go on for.

These are extreme examples of what may occur when there is not the free communication there ought to be between the medical and nursing staffs, which many doctors think there is, but which, as the nurses' remarks showed, there usually is not. It was quite clear that consultants would get many surprises if they encouraged matrons and sisters to speak freely, and it was equally clear, as I said, that senior nurses would get the same if they let the juniors say what was in their minds. It is truly tragic that where people are trying to do their best for others there should be so much frustration and waste largely because, owing to tradition, pride, or fear, communications are blocked.

I may be wrong, I may even be gullible, but this was the unexpected impression the conference made on me ; and just because it is so different from what I thought, and what Dr. Ritchie Russell in his eminence thinks, I deemed it my duty to write as I did and reply as I do.—I am, etc.,

Winsford, Cheshire. W. N. Leak.

Sir,—As a past member of both those much-criticized bodies, the General Nursing Council and the Council of the Royal College of Nursing, and having been a ward sister in the halycon days regretted by Dr. W. Ritchie Russell (December 9, p. 1569), may I draw attention to a few facts concerning the nurses in training then which I think should be borne in mind ?

Despite great efforts to reduce hours of duty, in most hospitals these were still from 55 to 60 weekly, with a daily span of 13 hours. "Days off" for some only occurred once monthly. Lectures and classes were compulsory, as now, but were almost invariably attended in off-duty hours, even on the days off, and for those on night-duty in sleeping time. The holiday allowance was three weeks annually, and there was little encouragement to take sick-leave except for very genuine illness.

In the wards the turn-over, with the resultant extra work, was much less rapid. There were fewer severely ill patients at one time, and operating sessions, except for emergencies, normally finished by 8 p.m. There were fewer medical rounds, and the work was not delayed by the frequent visiting of recent years. Although they had some domestic duties, the nursing staff were not called upon to fill the many and varied gaps left by other grades of staff with circumscribed hours of work.

Like many of my contemporaries, I look back nostalgically on those days, but I hardly think we should recommend putting back the clock, even if it was possible to do so, and I am sure that the young student nurses of to-day would hold the same view.—I am, etc.,

Hove. L. J. Ottley.

Shortage of Nurses

Sir,—I have been reading the letters of Dr. D. H. Barham (August 5, p. 384, and October 28, p. 1153) with interest. I would suggest that the better solution would be for the Ghanaian Government to improve the training of nurses within their own country.

I believe that the best place for a nurse to receive her basic training is in the economic and social environment that she understands. There is much more to nursing than the acquisition of technical skills and knowledge. To nurse a patient properly one should understand the individual, be able to gauge his reactions and to assess his deviation from normality. I speak from experience because, as a trained nurse, I have nursed in countries other than my own and found it took some considerable time to learn these things about my patients and so be able to nurse them intelligently.

Post basic training is a different thing. In this field we can give valuable help to students from the Commonwealth. It will be many years before these countries can offer courses comparable to the long-established ones we have here. By all means let them come over here to learn how to be nurse teachers, administrators, and public health nurses. They can take this knowledge back and plough it into their own country and so enrich the growth of their own service.

It is said that the hospitals of Great Britain would be in dire straits if we had no Commonwealth students. At first sight this may appear to be so, but I think if this source of labour were to dry up we would get a more realistic picture of the needs of the country and be forced to do more radically what we are already doing very slowly—i.e., measure our needs to our resources. In a time of full employment when there are too many jobs chasing too few people young school-leavers are faced with a wide choice of careers, and for some years nursing has had more than its fair share of them. This cannot continue and statistics are already showing that the numbers of entrants are falling. We will not get more nurses. We will almost certainly get fewer and our efforts should be directed at the better use of nurses' time and the introduction of every possible labour-saving device. This will entail the expenditure of considerable sums of money, but it will be better spent that way than in giving costly education (and the education of a nurse is very costly) to young people whose own governments should carry this responsibility.—I am, etc.,

London S.W.12. Jean P. A. Campbell.

Undiagnosed Diabetes

SIR,—The recent letter in your columns by Drs. J. M. Stowers and P. D. Bewsher (December 2, p. 1492) has again drawn attention to the value of intensive surveys for the detection of diabetes mellitus. As they point out, the efficiency of such surveys depends greatly upon the keenness and application of the nursing staff responsible for the performance of the urine tests. This finding reflects upon the standards of "routine" hospital urine testing, in that such simply detected abnormalities should not have been missed in the first place.

Recently we reported an investigation of routine hospital urine testing for glycosuria and proteinuria in the same Region.[1] This investigation revealed an alarming discrepancy between the results of ward and laboratory testing of the same urines, even when the same methods were used. Furthermore, there were considerable differences in the results from outwardly similar wards using the same techniques (see Table).

	Percentage of Possible Positives		
	"Clinistix"	*"Clinitest"*	*"Uristix"*
Clinic	89.6	—	98
Ward A	94.8	—	94.8
Ward B	30	—	70
Ward C	—	23.1	53.8
Ward D	—	0	80

The value of stimulus from the medical staff was clearly demonstrated during this trial. In one unit the positive results for glycosuria were 40% of the laboratory positives, whereas after a lecture to the nursing staff of this unit on the value of urine testing for glycosuria the positive results immediately increased to 89.6% of the laboratory positives. The same method, "clinistix," was used throughout. While it might be argued that trace results for glycosuria are not of any great significance, we must point out that in 94 out of 159 cases of glycosuria missed by the wards we found 0.5 g. per 100 ml. or more of glucose in the urine. On two occasions a complete reduction of Benedict's solution in the laboratory had been recorded as negative by the ward method.

The sensitivity of the various methods has not been stressed frequently enough. There is little doubt that clinistix and the American counterpart "uristix" are the most sensitive and specific tests available. However, these stick tests lose their sensitivity in a relatively short time after exposure to air, particularly if the bottle is left open or is closed carelessly. "Clinitest" and Benedict's test are less sensitive, non-specific, and liable to many technical errors. Clinitest tablets deteriorate very rapidly in air; this could be avoided by airtight wrapping of the individual tablet. Neither test has any place to-day in screening for diabetes.

How may results be improved? Closer supervision of those performing "side-room" tests is essential. Few clinicians nowadays pay much attention to these simple investigations or, in fact, know which test is being used in their own wards. In our experience the best results are achieved when the urine is tested by a fully trained conscientious nurse who is aware of the significance of the results obtained and who is encouraged to regard this sometimes tedious work as an essential part of the investigation of every patient. If one accepts that the complications of diabetes mellitus can be averted or delayed then surely it is demanded of the medical profession that they use the simple methods available to their best advantage. If diabetes mellitus were a rare disease and the methods of detection more complex, then we feel sure that every patient attending hospital would be thoroughly investigated for signs of this "interesting condition."—We are, etc.,

Department of Pathology, Queen's College, Dundee.
J. A. KIRKLAND.
H. G. MORGAN.

REFERENCE

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Packaging Strips for Urine-testing

SIR,—Thinking that the strip-test for albumin and glucose in urine could be made more convenient by another packing, I wrapped some strips of each kind in kitchen aluminium foil so that each was separated by the foil from the next and the bottom was protected by folding over the excess foil. This left about half an inch projecting at the top for identification. This bundle held its shape well when compressed slightly, and during the nine months that it lay loose in my bag none of the strips worked free.

The strips were then tested with the following results: the albumin strip detected a trace of albumin quite clearly. The glucose strip, although slightly discoloured, detected beyond doubt a 0.25% glucose and even a trace of glucose not detectable by the "clinitest" (quantitative test). The colour change was comparable to that obtained with a fresh strip. Normal urine and tap water gave no colour change with the old strips.

Apart from the convenience of this packing it opens up the possibility of providing a small number of strips for the testing of urines at home. In this way the groups of patients with the highest risk of diabetes (relatives of diabetics, fat women, and mothers of large babies) could be screened by a simple dip test in their own homes.—I am, etc.,

Glasgow S.E. W. PEARSE HANLEY.

Honey-pot Specimens

SIR,—I am disturbed to learn that all hospitals still do not use the midstream method of collection when a specimen of urine for bacteriological examination is required from a woman patient. A nurse told me how she had the hardly pleasant experience of seeing another nurse fumbling with a catheter when attempting to catheterize her. A more experienced nurse doubtless could have performed the procedure with more skill and less risk of introducing infection. But, as has been pointed out in articles[1 2] and letters[3 4] in the *British Medical Journal* and other publications,[5 6] the risk remains that infection may be introduced by catheterization, with the possibility of future chronic pyelonephritis with all its attendant ills and miseries.

In my experience the collection of clean specimens of urine, so-called "honey-pot specimens" (because of the container), from elderly and often confused patients has been found to be satisfactory procedure. In view of this, the collection of midstream urine specimens from younger patients should present no real difficulties, and from the patient's point of view would seem to have only considerable advantages.—I am, etc.,

Edinburgh. J. PATERSON.

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Wasp Venom and Diabetes

SIR,—I have had diabetes for nine years, and during this period, with the aid of insulin, have led a fairly normal life.

About ten weeks ago I was stung twice on the fleshy part of the right forearm by a wasp. All was well all day. I had normal food and the usual injection of insulin at 8 p.m. At 2.45 a.m. I had a really bad bout of hypoglycaemia. It took six lumps of sugar, a sandwich, and some sweet tea to get back to normal, taking nearly an hour. This was to me a fantastic amount of sugar, as two lumps normally stop any tendency to hypoglycaemia.

Since this injection of wasp venom over two months ago, I have had to reduce the insulin considerably. I used to inject 32 units at 8 a.m. and 22 units at 8 p.m. I am now reduced to 24 units in the morning and 12 in the evening. It seems to me that the wasp venom stimulated my pancreas to produce more insulin.

This would be an interesting subject for research.—I am, etc.,

Hythe, Kent. GERALD JACK.

Nystagmus and Alcoholic Intoxication

SIR,—In *Taylor's Principles and Practice of Medical Jurisprudence*[1] under the heading of diagnosis of acute drunkenness (p. 431) we find: "There is difficulty in fixation of the eye and convergence is limited—nystagmus or diplopia may occur." On page 439 we find: "The presence of nystagmus should be looked for. The doctor should examine for fine lateral nystagmus, and consider his findings in conjunction with the examinee's pupillary reactions. The presence of fine lateral nystagmus may be regarded as strongly indicative of alcoholic intoxication—but its absence is not proof of the absence of alcoholic intoxication." In the B.M.A. handbook *Recognition of Intoxication*,[2] under the heading of *Nystagmus* (p. 16), we find almost a verbatim quotation from *Taylor*: "The presence of nystagmus should be looked for. The doctor shoud examine for lateral nystagmus, and consider his findings in conjunction with the examinee's pupillary reactions. The presence of lateral nystagmus may be regarded as strongly indicative of alcoholic intoxication—but its absence is not proof of the absence of alcoholic intoxication."

From the above we observe that the absence of nystagmus is not proof of the absence of alcoholic intoxication. What value can be attached to its presence? I conducted a simple investigation (which can be easily duplicated).

I examined a succession of claimants (both men and women) who attended at the Ministry of National Insurance Boarding Centre, for the usual M.N.I. disabilities, for nystagmus. The purpose of the examination was to find out how often nystagmus occurs in more or less normal cases. In order to have the cases as normal as possible, I deliberately excluded any case which presented (1) a history of injury to the head; (2) any case presenting a history of chronic ear-trouble. I intended to exclude any case presenting any stigmata of alcoholic intoxication, but this did not arise during the investigation.

Out of 153 males 32 presented the clinical signs of lateral nystagmus; out of 50 females two presented the clinical signs of lateral nystagmus. These findings suggest that even the presence of nystagmus cannot be regarded as strongly indicative of alcoholic intoxication. There is another curious feature arising from the above investigation. Nystagmus was found 1 in 5 in males and 1 in 25 in females. It is interesting to note that in the *British Encyclopaedia of Medical Practice*[3] the following occurs: "It has been stated that hereditary nystagmus may be an autosomal recessive trait. It may be sex-linked, occurring only in males, or it may be irregularly dominant, occurring in both sexes."—I am, etc.,

Middleton, Lancs. B. HIRSH.

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[3] *British Encyclopaedia of Medical Practice, Medical Progress, 1947*, p. 360. Butterworth, London.

Corkscrew Foetus

SIR,—Periodically an unusual foetal attitude, captured by *x*-ray examination, is recorded.[1–5] Notes on a recent case are given to promote discussion.

A primigravida, aged 16, attended St. Paul's Hospital on January 31, 1961. The expected date of delivery was June 19. Height 5 ft. 3 in. (1.58 m.), weight 10 st. 6 lb. (66.2 kg.). She attended clinic regularly, but the lie of the foetus remained unstable. At 38 weeks the head entered the brim on standing; at 39 weeks occipito-posterior position, head in the brim; at term the head was in the left iliac fossa. *X*-ray examination in the clinic gave the immediate impression that this was a "flying foetus." Admission was arranged.

The oblique lie persisted, and the head could not be made to enter the pelvis. Further *x*-ray examination was not made. The film shows that the head on one side, the feet and hand on the other side, are competing for the pelvic inlet; the head appears to be rotated through 180 degrees. It seemed highly unlikely that vaginal delivery could occur.

At 41 weeks the head was entering the pelvic brim. The next day the breech was presenting. After external cephalic version an artificial rupture of membranes was performed. Uterine contractions commenced four hours later; full dilatation occurred 11½ hours after induction. The baby was born normally, the second stage lasting 25 minutes. Ergometrine 0.5 mg. with "hyalase" (hyaluronidase) was given with the birth of the anterior shoulder. The placenta was expressed after five minutes—blood loss, 2 oz. (57 ml.). A further loss of 12 oz. (340 ml.) occurred 75 minutes later.

The infant, weighing 7 lb. 10 oz. (3.46 kg.), showed mild blue asphyxia. Examination showed no gross abnormality; no unusual position, nor movement of the head, neck, or limbs. He made normal progress—discharge weight 7 lb. 13½ oz. (3.56 kg.).

The purpose of recording this case is not to draw attention to an apparent rarity, but rather to emphasize the importance of intrauterine foetal muscular movements. The mechanistic theories of labour, as taught, have ignored the active foetal movements and posture. The baby is viewed, erroneously, as a passive, jointed dummy, whereas any practising obstetrician has felt foetal movements of the head and hands, and has encountered a hand beside the head, or arms below a chin, in positions which could have accounted mechanically for a high transverse arrest or a deflexed head.

The recurring, but varying, pattern of foetal attitude caught by *x*-ray examination periodically reminds one of the varying and peculiar attitudes of the premature baby. Before the advent of the modern incubator, allowing observation of the naked premature baby, one was not so aware of the peculiar periodic muscular movements now revealed. The movement patterns of the premature and full-time babies and their response to various stimuli are being studied by various workers. How these patterns may be altered by the baby being in a confined space of varying size and shape could be of significance in obstetrics.—I am, etc.,

London W.1. IAN A. DONALDSON.

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[2] Gibberd, G. F., ibid., 1935, **42**, 596.
[3] Knowlton, R. W., ibid., 1938, **45**, 834.
[4] Trillat, P., *Gynéc. et Obstét.*, 1926, **14**, 211.
[5] Vartan, K., *J. Obstet. Gynaec. Brit. Emp.*, 1949, **56**, 650.

Phenoxypropazine

SIR,—Your report on phenoxypropazine ("drazine") in "To-day's Drugs" (November 18, p. 1353) is sufficiently at variance to my own experience with the drug to call for some comment.

It is stated that the majority of cases showing favourable response do so in 5–7 days. In a preliminary evaluation of 20 cases, made at this clinic, 20% of cases showed improvement at the end of seven days, and 57% by the end of three weeks. Over half the cases eventually showing a marked improvement did not show any change after one week on the drug, and in most cases improvement began between the 10th and 14th day of treatment. In all cases any improvement was progressive, and such cases were either recovered or much improved by the end of six weeks (57%). Cases showing no change at the end of three weeks were discontinued.

One must also disagree with the advice that the average patient will require the drug for 10–12 weeks. Based on our experience with other effective monoamine-oxidase inhibitors, the average duration of maintenance therapy with this group of drugs is six months.

The implication that phenoxypropazine is indicated primarily in atypical depressions is controversial. My own experience with this drug, as with an established monoamine-oxidase inhibitor such as phenelzine, is that these drugs are most effective in mild to moderately severe endogenous depressions. These cases frequently show secondary neurotic symptoms, but there is a lack of obvious environmental causation and a satisfactory previous personality. I do not regard these cases as atypical.

I have, to date, found phenoxypropazine very free of side-effects. One case was discontinued on account of diarrhoea. Other side-effects have been trivial, apart from a severe pulsating headache, lasting several hours, in two patients after taking alcohol. In this respect it resembles phenelzine, where this sequel to taking alcohol has been frequently observed. No case, as yet, has shown the excessive mental tension described in your report, and one wonders, in view of the fact that there are no published clinical reports on this drug, what is the evidence for the information supplied? While my own preliminary impression is that phenoxypropazine is a promising and safe antidepressant, it seems premature to be in any way dogmatic about its properties at this stage.—I am, etc.,

Uffculme Clinic, Birmingham 13. NORMAN W. IMLAH.

Experiments on Animals

SIR,—It is interesting to read Dr. W. Gover's letter on "Experiments on Animals" (December 2, p. 1498) and in the same issue (p. 1491) Sir Hugh Linstead's lecture before the Research Defence Society. In the experiments quoted by Dr. Gover one wonders if the qualities of "sensitiveness and humanity" existed there, and, alas, this is not an isolated case, for one reads of far too many similar ones in the medical and pharmaceutical press where the suffering entailed appears to be out of all proportion to any benefit to the human race. Cruelty is cruelty whether to humans or animals, and if "the mental image of the suffering animal" no longer wins support from the public, then, perhaps, this attitude is reflected in the increase of cases of cruelty reported by the R.S.P.C.A. this year. I for one deplore it and only see in it that we are becoming more indifferent or more selfish or more callous.—I am, etc.,

South Petherton, Somerset. EDWINA HAGUE.

SIR,—I read with interest, and not a little curiosity, your report (December 2, p. 1491) of the thirtieth Stephen Paget Memorial Lecture delivered before the Research Defence Society on November 21 by Sir Hugh Linstead, M.P., and I shall look forward to reading the full paper if and when it is published. Meanwhile, perhaps I may make one or two comments.

It was a natural courtesy on the part of Sir Hugh to pay what tribute he could to his hosts; but to say that the Research Defence Society had played a distinguished part in bringing about a wide understanding among the public of the objectives and results of experiments involving the use of animals is going a little beyond the facts, for the undistinguished and almost indistinguishable society in question is totally unknown to the general public. Even the vivisectors themselves are not very enthusiastic about it, for it was stated officially only a few years ago that fewer than 30% of the licensees were members. Its financial

support comes largely from the drug houses, who, in view of the fact that they supply each doctor with nearly a hundredweight of advertising matter annually, cannot be said to be acting disinterestedly.

In contrast to this rather pathetic state of affairs the societies opposing vivisection have, by their incessant activity supported by studiedly careful critical analysis, made "anti-vivisection" almost a household word, particularly in recent years. Sir Hugh referred to anti-vivisectionist literature, and said that "one was almost awed by the power which could be exerted by illogical argument and selective statistics when they were reinforced by savage indignation." It may be that in his lecture he quoted examples in support of these criticisms: if so, I can defend them when I know what they are (Sir Hugh kindly asked for some of our publications before compiling his lecture). In using statistics, which by the way all come from official sources, we are careful to do so in such a way as to avoid any unfair emphasis. The lecturer also made the point that "in the controversies that surround experiments on animals many of the facts were there for all to see in the Registrar-General's Morbidity Statistics and in the Annual Reports of the Chief Medical Officer of the Ministry of Health," meaning, apparently, that the reduction in morbidity and mortality of certain diseases as the fruit of animal experiments. This is not only unproved, but unprovable; and in fact some of the most devastating infectious diseases disappeared from Britain before the vivisectional method began to be employed. Here, once more, we have the *post hoc ergo propter hoc* argument misused.

Sir Hugh concluded his lecture by saying that nothing can take the place of animal experimentation. There are in existence many forms of medical treatment of a non-allopathic kind that are quite unrelated to animal exploitation; and it may be of some interest to the medical profession to know that in November several anti-vivisection bodies in Britain joined together in founding and financing the Lawson Tait Memorial Trust, which will offer substantial awards, on certain conditions, for fruitful non-vivisectional research. So perhaps Sir Hugh's dismal prognostication will prove to be unfounded.—I am, etc.,

WILFRID TYLDESLEY,
Secretary, British Union for the Abolition of Vivisection.

London S.W.1.

Seasonal Incidence of Hodgkin's Disease

SIR,—More patients in London reported onset of symptoms of localized Hodgkin's disease during December (22%) than during any other month (Dr. Marion D. Cridland, September 2, p. 621), while in Edinburgh more patients (18%) reported onset of symptoms in January (Drs. J. Innes and J. Newall, September 16, p. 765). Therefore it was suggested by Dr. K. W. Beetham (September 30, p. 896) that in London the increased incidence may be related to Christmas, and in Edinburgh to New Years, while in Hull there may be an increased incidence during the traditional fair in October. Dr. Cridland (October 14, p. 1022) responds to this suggestion of a "festival incidence" by anticipating reports of increased incidence of Hodgkin's disease from the United States associated with Thanksgiving Day, and from Israel associated with the Jewish New Years.

Increased incidence of onset of symptoms of Hodgkin's disease associated with festivals may be explained by a clinically well-recognized, though poorly understood, pathophysiological mechanism; but, though Dr. Cridland may be keen in her statistics, she is weak in her sociology. It is known that alcohol produces mild to severe pain in the swollen lymph nodes in Hodgkin's disease in about 17% of patients, and in some may cause further swelling of peripheral nodes.[1] These alcohol-sensitive patients may well be the ones responsible for the increase in the number of patients who notice their swollen nodes during festival months. On the other hand, alcohol does not cause pain in the other malignant lymphomatous diseases, and, correspondingly, Dr. Cridland notes that she finds no seasonal onset in lymphosarcoma or reticulosarcoma.

As for the sociological side, Thanksgiving Day is celebrated in the U.S. at family feasts where the emphasis is on hearty eating rather than on drinking. Hence statistics from the U.S. should reveal increased incidences of Thanksgiving-Day-induced attacks of gall-bladder colic, ulcer pain, and gout, but not Hodgkin's disease. However, the use of alcohol in the U.S. during the Christmas season is probably at least as widespread as it is in London, and on New Years as it is in Edinburgh. (Do the Scots celebrate New Years more enthusiastically than Christmas?) Therefore there should also be a peak in the incidence of Hodgkin's disease in the U.S. in December and January. But from Israel one needn't expect an increased incidence of Hodgkin's disease during the abstemious Jewish New Years. An increased incidence might possibly occur during the Passover festival (when the drinking of at least four cups of wine is mandatory) or during Purim (the Feast of Esther, when intoxication is sanctioned by custom, unfortunately more often observed in the breach).—I am, etc.,

Hadassah University Hospital, Jerusalem, Israel. S. H. BLONDHEIM.

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[1] James, A. H., *Quart. J. Med.*, 1960, **29**, 47.

Delusion of Safety

SIR,—Letters and articles in your journal commend the value of crash helmets and safety straps. A few days ago I saw a string of motor-cyclists, all with crash helmets, travelling through a built-up area at over 60 m.p.h. The following day I was passed by a minicar, driven at, at least, 70 m.p.h. The driver was wearing a safety belt. On each occasion the road was greasy and unsafe.

If these safety contraptions are merely going to create the delusion of protection from accident, the end result is going to be even worse than if we did not have them at all. The wearing of an asbestos suit is insufficient reason for strolling about in a burning building.—I am, etc.,

Keighley and District Victoria Hospital, Keighley. IAN STEWART.

Anaesthesia for Tracheostomy in Children

SIR,—Anaesthetists and others must be grateful to Dr. A. J. Hawes (November 25, p. 1432) for his excellent account of operating conditions in earlier days. The description is a masterly piece of objective reporting, notable for its lucidity, honesty, and humanity. It serves as a tribute to the advances made in anaesthesia and in the prevention of diphtheria.—I am, etc.,

St. Bartholomew's Hospital, RONALD A. BOWEN.

Poliomyelitis at Hull

SIR,—Dr. T. C. Dann (November 25, p. 1431) considers my letter (November 4, p. 1224) alarming. It was intended to be provocative and it was hoped that it would produce some reply from the health authorities who have provided a minimum of information on this important subject.

Most of our knowledge about polio vaccination is derived from laboratory work. Since vaccination started there has been no major outbreak, but it would be wishful thinking to suppose that this was evidence of the success of vaccination since it is well known that the incidence of the disease varies. One would have anticipated, therefore, that the epidemic at Hull would have provided practical experience which could have been passed on to the profession. I repeat that the figures are too small to be statistically significant, but if Dr. Dann considers they are medically significant I suggest that for a comparatively small outbreak to include two completely "protected" children is not reassuring. Any faulty reasoning regarding the twelve incomplete inoculations is due to the inadequate data provided. The onus is on the M.O.H. to show some evidence that these children were not rendered more susceptible: in any event incomplete vaccination does not seem to have been of any benefit to them.—I am, etc.,

Reigate, Surrey. T. W. PRESTON.

"A Case of Bronchiectasis"

SIR,—It would be interesting to know whether tests for aspergillosis were done in this case (November 25, p. 1417). Asthma, blood eosinophilia, and the development of bronchiectasis all suggest this possibility (bronchiectasis can follow "eosinophilic infiltrations").

Aspergillosis may be misdiagnosed as active pulmonary tuberculosis in two circumstances: (1) The radiological opacities seen in the allergic type of aspergillosis may resemble tuberculous infiltrations. Clearing of these transient opacities may then be attributed to antibacterial treatment and the appearance of fresh opacities interpreted as tuberculous relapse. This has sometimes been abetted by the report of acid-fast bacilli in a sputum smear. *Aspergillus fumigatus* is not acid-fast, but asthmatics often harbour many different fungi and so it seems possible that *Nocardia*, for example, which are acid-fast, could be mistaken for bacilli. (2) The healed lesions of pulmonary tuberculosis may be invaded by *Aspergillus fumigatus* and the change in the radiological appearances, often quite bizarre in form[1] and sometimes accompanied by haemoptysis, can be misinterpreted as reactivation of tuberculosis (as many as perhaps 20% of open-healed tuberculous cavities will develop mycetomas).

Two "rules" may be made. (1) "Never" diagnose pulmonary tuberculosis in an asthmatic without a positive sputum-culture. (2) "Always" consider the possibility of aspergillosis in any unexplained radiological change in a long-standing tuberculous lesion.—I am, etc.,

Whittington Hospital, London N.19. P. D. B. DAVIES.

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Liver Function in Acute Myocardial Infarction

SIR,—Dr. A. J. Rosin (September 9, p. 675) found an abnormal bromsulphthalein retention in acute myocardial infarction, but there was no correlation between abnormal bromsulphthalein retention and elevated blood urea. He writes: "This may be explained by the different degrees of alteration of blood flow to the liver and the kidney."

In my opinion the rise of blood urea in myocardial infarction is related to another mechanism. The rise is due to overactivity of the liver—namely, of its ureapoietic function. This hypothesis (liver hyperfunction) may also explain other signs observed in acute myocardial infarction, such as hyperglycaemia, and the rise of fibrinogen and of enzymes. The liver is stimulated probably by the autonomic nervous system.—I am, etc.,

C.F.R. No. 1 Hospital, Bucharest, Rumania. EMANUEL Y. COHEN.

Umbilical Sepsis

SIR,—With respect to the results of research by Dr. V. D. Plueckhahn about umbilical infections (September 23, p. 779) would it not be advisable to induce the pharmaceutical industry to produce a protecting spray, similar to the "nobecutane" spray, which, applied at the first dressing after birth, would screen off the cord and the surrounding skin of the umbilicus, be left *in situ* till the cord has separated, removed for removal of the cord stump, and reapplied till the umbilicus has definitely healed? This might eliminate umbilical infections for good.—I am, etc.,

Moshi, Tanganyika. R. MOGILNICKI.

Dirty Dummy

SIR,—To-day I visited a child aged about 2. When I entered the room she was sucking a dummy which she then dropped on to the floor, which was filthy. The mother picked it up, sucked it "clean," and replaced it in the child's mouth. When I protested she was both surprised and annoyed that I should criticize the practice.

Is there any evidence that these unhygienic objects are in fact dangerous, and if so can anyone suggest a method of breaking the almost fanatical devotion that these mothers, invariably unintelligent, have to the dummy as the only possible way of keeping their child quiet? Advice is disregarded and I have neither the time nor inclination for psycho-analysis.—I am, etc.,

Sheerness, Kent. MICHAEL F. HAWKINS.

"Forward Bend" and Disk Trouble

SIR,—At the present time our surgeries and hospital out-patients are subjected to attendance from a large number of people who complain of "low backache." Radiography of lumbar spines in patients beyond middle age shows a large percentage of disk-space narrowing and osteophytic lipping.

Although the term "disk trouble" is relatively modern in usage, how old in fact is the anatomical and physiological change and why does it start? Not all patients experience pain, but when they do we are adamant that spinal flexion must be avoided further at all costs; extension exercises are prescribed and we are

gradually becoming a nation of spinal-brace wearers to remain erect. How much of this is preventable?

I feel that an exercise at any age involving forced flexion of the spine is unnecessary and may be harmful. Perhaps such exercises, as at school or in the armed Forces, are contributory factors in producing spinal-ligament weakness for further trouble later in life. Whether this is so or not, I think exercises of the "forward bend and touch the toes" type are totally unnecessary. The same effect on waist musculature can be produced in many other ways without producing spinal stress.

I should be pleased to hear some other opinions on this subject.—I am, etc.,

Leeds 8. G. R. ADDLESTONE.

Intramuscular Injections

SIR,—Dr. J. de Swiet (October 21, p. 1083) advocates intramuscular injection by holding the needle separate from the syringe by the butt. Not only is this method painless, as Dr. de Swiet remarks, but also safer, for it decreases the likelihood of the needle breaking by removing the force of leverage exerted by the syringe. Since being shown this technique, I have never used any other, and often my patients are unaware that the injection has been given until, as they look impatiently over their shoulder, they see the syringe being put away.

Another useful hint I was told by a doctor who used to train doctors and nurses in India was that if a gluteal injection is given while the patient is in a sitting position (either in bed or on a stool) it is impossible to damage the sciatic nerve. Having myself experienced the pain of an injection in the outer part of the thigh, I no longer inflict such injections on my patients.—I am, etc.,

Buruta, Nigeria. S. R. S. LAING.

Withdrawal of Thalidomide ("Distaval")

SIR,—We are very grateful for the many expressions of appreciation of the value of "distaval" which we have received during the past three weeks. Pharmacological studies and clinical inquiries are already in hand to determine whether thalidomide taken in early pregnancy can have harmful effects on the foetus. It is a particularly difficult problem due to the small number of reports so far received and a lack of official statistics on which to base our assessment. We would be very grateful for any information from personal experience which your readers can provide.

Although a decision regarding the re-issue of "distaval" for general use must await further investigations, we are prepared, in response to a number of requests we have already received, to make supplies available to hospitals where the administration of the drug and its companion products will be under close supervision and its use in pregnancy can be avoided. —I am, etc.,

The Distillers Company, London S W.19. D. J. HAYMAN, Managing Director.

More than 25,651 B.C.G. vaccinations were carried out in Hong Kong during the third quarter of 1961 as part of the Medical and Health Department's drive against tuberculosis. Of this number, 24,484 were given to newborn infants. The numbers vaccinated during the three-month period represented 86.3% of all infants whose births were registered in the same period.

Obituary

N. M. WILSON, C.I.E., O.B.E., M.R.C.S., L.R.C.P. D.T.M.&H.

Major-General N. M. Wilson, who had a long and distinguished career in the Indian Medical Service, died in hospital in Torquay on December 3 after a brief illness. He was 80 years of age.

Norman Methven Wilson was born on February 22, 1881, his father being an officer in the Indian Public Works department. From Dollar Academy he went on to study medicine at St. Bartholomew's Hospital and took the conjoint qualification in 1904. Entering the Indian Medical Service in the following year he was occupied for some years on regimental duties, and during the first world war he served overseas and later in Waziristan. He was appointed O.B.E. in 1920 for his military services.

On transfer to civil employment in the Punjab Wilson rapidly built up a high reputation for surgical skill; and at Lyallpur, the most important agricultural district in that great province, his fame attracted hordes of patients with vesical stone, cataracts, and abdominal tumours. As a result of his *bonhomie* and his all-round technical competence he was selected as Civil Surgeon of the summer and winter capitals of India—Simla and Delhi—where Indian and European alike, from Viceroy to peasant, put themselves in his competent hands.

After holding the post of Chief Medical Officer, New Delhi, he was appointed Inspector-General of Civil Hospitals in the Central Provinces. In 1937 he succeeded Sir Frank Connor as Surgeon-General with the Government of the premier presidency in India—Madras. At that time Dr. T. S. S. Rajan, the Minister of Health, was putting into effect a policy which was destined to alter medical education and hospital staffing throughout India. That "rajanization," as the policy came to be known, did not founder in its beginning was partly due to Wilson's common sense and understanding. He needed these qualities to the full, for his Minister referred to him in a public speech as "my overpaid subordinate." As a result of this the Governor, the late Lord Erskine, took the opportunity to tell the Minister how members of the Government treated their permanent officials in Great Britain. The trouble blew over, and Wilson was able to go ahead with his plans to institute postgraduate teaching in tuberculosis. As a consequence many doctors from all over India were eager to take the Madras diploma in this subject.

Among Wilson's many other achievements was his successful struggle to save the Vellore Medical School from extinction. His determination to see that his Indian colleagues and subordinates were never unfairly treated won him the admiration of his own and other Indian services. Appointed C.I.E. in 1939, he was Honorary Surgeon to the King from 1937 to 1941, the year he retired. For some months he officiated as Director-General of the Indian Medical Service in a leave vacancy.

Wilson took the D.T.M.&H. when on study leave in 1921 but never took a higher qualification, depending on reading and visits to Bart's for his knowledge of progress in medicine and surgery. Nevertheless he was a shrewd observer of the way things were going, and when he became a senior administrator he actively encouraged his officers to work for higher qualifications, and in the case of obstetricians and gynaecologists required them to jump both the F.R.C.S. and M.R.C.O.G. hurdles.

A man with a good head, heart, and hands, he actively disliked the theory that the ham-fisted man might be employed in a surgical teaching post if he had a good brain, vigorously supporting the thesis that skill in handicraft was a *sine qua non* for a surgeon and that naturally clumsy men should take up some other branch of the profession. As a non-specialist civil I.M.S. officer he was the embodiment

of the ideal general practitioner, ready to tackle anything from an outbreak of plague to an impacted breech or cholecystectomy. He received admirable help in his career from his wife Sara, who herself won admiration for many good and charitable deeds. In Chagford, Devon, to which they retired, they both took a useful and active part in the local community's affairs. His widow survives him, together with a son and a daughter.

G. L. KERR PRINGLE, *M.C.*, M.D.

Dr. G. L. Kerr Pringle, formerly physician on the staff of the Royal Bath Hospital, Harrogate, and a well-known authority on rheumatism, died at his home near Peterborough on November 6. He was 92 years of age.

George Loraine Pringle was born in Edinburgh, the son of Dr. John Pringle, who held the post of deputy inspector of general hospitals in the Honourable East India Company's Service. Educated at the Edinburgh Academy and Edinburgh University, he graduated M.B., C.M. in 1893 and proceeded M.D. in 1897. His distinguished academic career was recognized by his election to the presidency of the Royal Medical Society of Edinburgh. After holding resident appointments at Edinburgh Royal Infirmary and the Royal Hospital for Sick Children, he started practice in Bridgwater, Somerset, and was appointed honorary surgeon at the local hospital. He moved to Cullercoats, Northumberland, in 1900 and finally settled in Harrogate in 1906, being elected to the staff of the Royal Bath Hospital in 1912. In 1914, at the beginning of the first world war, he became medical officer to the West Yorkshire Regiment but was later transferred to No. 29 Casualty Clearing Station. This was heavily bombed in the March retreat of 1918, and for his work in evacuating the wounded while under heavy fire he was awarded the Military Cross.

On resuming practice in 1918 he served on many committees, notably the Spa Practitioners' Group of the B.M.A. and the Committee for Research into the Causes and Treatment of Arthritis. He was also chairman of the Harrogate Division of the B.M.A. in 1931–2. In order to voice medical opinion in the affairs of Harrogate he became a member of the Town Council in 1924, but he was no politician and served for only one year.

He acquired an international reputation as an authority on the rheumatic diseases and contributed many articles to the medical journals. Perhaps the most noteworthy was his "Summary of Two Thousand Consecutive Cases of Rheumatic Disease," a paper read before the Section of Physical Medicine of the Royal Society of Medicine, where he had formerly been president of the Balneological Section. He was also the British representative on the International Society of Medical Hydrology.

When he returned to Harrogate in 1918 he found the Royal Bath Hospital in a very antiquated state and immediately began to plan a long-term modernization scheme. He inspired all the medical staff and the hospital committee with his enthusiasm, and it is fitting that a ward in the modern hospital is named after him. His name will be also remembered in connexion with a piece of oak carving which he did while serving in France and which is incorporated in the altar-piece of the hospital chapel. Those who had the privilege of working with him will always remember him as a doughty warrior when it came to pressing for improvements to the hospital. He was a genial companion, and outside his work his main interests were fishing and golf.

He leaves a widow and two step-daughters, to whom he was devoted, and to them we offer our sincere sympathy.

R. L. TURNER, O.B.E., M.B., Ch.B., F.R.C.S.Ed.

Dr. R. L. Turner, who died at his home on July 30 aged 58 years, had been in practice in Heswall, Wirral, Cheshire, for over thirty years.

Robert Lindsay Turner was born on October 31, 1902, at Balerno, Midlothian, where his father was minister. On leaving George Watson's College, Edinburgh, he entered the University of Edinburgh and graduated M.B., Ch.B., with honours, in 1926, winning the Buchanan scholarship in midwifery and gynaecology. After holding the posts of house-physician and house-surgeon at the Edinburgh Royal Infirmary he became the first obstetrical house-surgeon to Professor R. W. Johnstone at the Royal Maternity Hospital. In 1930 he became a Fellow of the Royal College of Surgeons of Edinburgh. Later in that year he joined a partnership in Heswall which has been in existence since the mid-nineteenth century and which has always had close ties with Edinburgh. Having long been in the R.A.M.C. (T.A.), it was natural that he should see active service as brevet colonel throughout the second world war. He was awarded the Territorial Decoration, and his valuable work during the North African and Italian campaigns was recognized in 1945 by his appointment to O.B.E. In that year, too, he was mentioned in dispatches for gallant conduct. After the war he returned to general practice, where his particular interest and skill were in the field of obstetrics. He was a Fellow of the Edinburgh Obstetrical Society and a member of the North of England Obstetrical Society.

Lindsay Turner enjoyed life to the full and had many outside interests, notably golf, gardening, Freemasonry, and church affairs (he was an elder of Heswall Presbyterian Church). The last four years of his life were marred by threats of serious ill-health, but these were never allowed to cause bitterness or to interfere with consideration of his patients' welfare. His sudden death, just as he seemed confident of returning to work after a heart attack, has robbed Heswall of a much-loved doctor and his partners of a respected and loyal colleague. To his widow, an infinite source of strength during the last trying years, his son, and daughter, we extend our sympathy in their sad loss.—J. L. S.

NORAH H. HAMILTON, M.B., B.S.
F.F.A. R.C.S.

Dr. Norah Hamilton, consultant anaesthetist to the Sunderland Area Hospital Group, died in Sunderland on November 19 at the age of 65.

Norah Hester Hamilton was born in Edinburgh of Irish-Scots parentage. She studied medicine at King's College, Newcastle upon Tyne, graduating M.B., B.S. in 1921. Perhaps in the schooling of her father's general practice, to which she eventually succeeded, were sown the seeds of that great humanity which was to govern her every outlook in life. An interest in anaesthetics, apparent from her earliest house-surgeon days, developed, and, encouraged by frequent postgraduate courses, she gradually spent more and more of her time on this specialty until in 1949 she left general practice—not without regret—to found, in the Sunderland Hospital Group, the department of anaesthesia, which she directed until her retirement. There must have been many ordinary people and many distinguished physicians and surgeons in the great congregation attending her memorial service who had grateful cause to remember her skill and extraordinary post-operative concern for themselves or their families. It might well be, in retrospect, that her recent and last illnesses were the price she paid for earlier, quite selfless devotion to duty, turning out at any time of day or night—particularly to obstetric emergencies. It was then that she brought with her, through all the bustle and flurry, a wealth of feminine sympathy and understanding which must have conveyed much solace to those in distress at the time.

None the less she will undoubtedly be remembered by the people of Sunderland for her work in general practice, for it was in this field that her quite exceptional gifts had their fullest scope. An immense capacity for work, an almost unfailing cheerfulness, combined with a rare personal generosity and natural liking for people, made her greatly loved. The news of her death was heard in sorrow, and in many a Sunderland home her old patients felt they had lost both physician and friend. She was at once the great

favourite of the old and young. Many a geriatric patient must cherish some earnest of her benevolence, many a child go to bed hugging a luxurious teddy bear quietly "left behind" by Dr. Norah. And who, in the intermediate age groups, could forget her general kindness shown in so many ways—the largesse dispensed at one of her parties for one? An eagerness to help, a complete lack of intrigue, a limitless reservoir of time in which to listen to and advise on the troubles of others, were facets of her personality which endeared her to many.

Outwith medicine, her tastes and interests were indeed catholic, as any visit to her home would have shown in the many collections there displayed—pictures, books, Staffordshire pottery dogs, and lore of ancient Greece, her fondness for which almost amounted to a passion. She travelled extensively and joyously in that fine country, and a lecture, illustrated with her own films, was practically her last appearance in public before her death. She was a member of the Business and Professional Women's Club and a founder member of the Townswomen's Guild, the North Side Medical Society, and the Sunderland Soroptimists.

She retired only in June, 1961, and her death was untimely, for Sunderland was bereft thereby of what would certainly have been much more personal service and the Arts lost a great patron.

To her surviving mother we offer our sincere sympathy.—K. Mc. K. and A. R. D.

JOHN COCHRAN, L.R.C.P.&S.Ed., L.D.S.

Dr. John Cochran, who died in Kilmarnock Infirmary on November 28, had been in general practice in Kilmarnock for 26 years. He was 56 years of age.

A native of Kilmarnock, John Cochran was educated at the Academy there. He studied medicine and dentistry in Glasgow, qualifying in both. For a time he was in general medical practice in Bolton, but he returned to his native town when his brother, Dr. James Cochran, died shortly after graduating in medicine. A champion athlete in his youth and an all-round sportsman, John Cochran had played rugby for the Kilmarnock Rugby Football Club and soccer for Kilmarnock Academicals and Kilmarnock F.C. Reserves. He was a prominent member of the doctors' team when the medical profession played the burgh constabulary for charity twenty-five years or so ago, thereby helping to endow a bed in Kilmarnock Infirmary. A keen gardener in later life, he was greens convener of Kilmarnock Golf Club for a number of years.

His death was unexpected, occurring shortly after he had collapsed while taking an evening surgery. He is survived by his wife and only son.

G. M. MAYBERRY, L.R.C.P.&S.I., L.A.H.

The obituary of Dr. G. M. Mayberry was published in the *Journal* of December 9 (p. 1576).

Dr. JOHN SPENCER writes from King George Hospital, Ilford: I read with great regret of the death of George Mayberry in November last. A perfect stranger to me, we met first when as pathologist here I was asked to inoculate his daughters against diphtheria. We became firm friends and remained so. As Dr. Ashworth Underwood wrote in his appreciation, he learned his medicine when ancillary services were in their infancy and had little to contribute to the clinician. That he became a first-class physician under those circumstances is a tribute to his skill. He did indeed run as a sprinter in the Olympic Games, and I believe he won a gold medal. A wonderful host, a charming, quietly spoken, and at times a most amusing man, he enjoyed his membership of Freemasonry, and will be mourned by many colleagues in that craft, as well as in medicine.

GEOFFREY R. EDWARDS, O.B.E., M.A.

Mr. Geoffrey Edwards, who was secretary of the Royal Society of Medicine for more than a quarter of a century, died at Aldeburgh on December 10 at the age of 70.

Z. C. writes: Many members of the medical profession will have noted with regret the notice of the death of Geoffrey Richard Edwards. He exerted a considerable influence on the development of the Royal Society of Medicine and on his retirement from the secretaryship was presented with its Honorary Fellowship.

Geoffrey Edwards was born in 1891, educated at St. Paul's School and St. John's College, Cambridge, and entered the Imperial Forest Service of India in 1913. During the first world war he served as a pilot in the R.F.C. and later in the R.A.F., and at the conclusion of that war he worked with the International Aeronautical Commission in Germany, leaving that in 1921 to do secretarial work at the National Physical Laboratory, Teddington. In 1925 he was chosen (out of more than 400 candidates) as secretary of the Royal Society of Medicine in succession to Sir John MacAlister. It was a very difficult task to succeed a man who had played such a predominant part in the foundation of the society, but Edwards entered enthusiastically into it and during his long tenure of office he greatly helped to integrate, expand, and extend the work of the society. Much of his work was done quietly behind the scenes, and few appear to know how great a part he took in the establishment of the photographic department and the restaurant, on the one hand, and in the furthering of international contacts on the other. During his period of office the number of Fellows rapidly increased.

Edwards was of an artistic and rather sensitive temperament. He took a keen interest in acting and the drama. A devout Catholic, he edited the *Catholic Medical Guardian* for some years. When he retired from the secretaryship of the Royal Society of Medicine at the age of 60 he was still active and for some years held the appointment of director of the Institute of Travel Agents. He was the recipient of several honours: in 1949 he was appointed O.B.E., and for his war services he was granted the Military Cross First Class of Czechoslovakia and made Officer of the Order of Orange Nassau and Commander of the Order of the Crown, Belgium.

In 1924 he married the eldest daughter of the first Viscount Simon, and there were two sons and one daughter of the marriage.

Medico-Legal

FATAL INJECTION OF ADRENALINE

[FROM OUR LEGAL CORRESPONDENT]

On October 30 a verdict of accidental death was recorded at an inquest on a patient who died in King Edward Memorial Hospital, Ealing, after a minor operation on the nose under a local anaesthetic. The cause of death was stated to be cerebral anoxia due to cardiac arrest due to injection of adrenaline into the nasal septum.

The patient, Mr. Colin Bradley, a 27-year-old school teacher, entered the hospital for a submucous resection of the nasal septum. An anaesthetist gave the deceased a postural block of 2 ml. of 8% cocaine, 1 ml. of 1 in 1,000 adrenaline, and 2 cc. of 1% sodium bicarbonate. Before the operation the surgeon had given instructions to the nursing staff to prepare 10 ml. of "xylocaine" with 8 minims of adrenaline 1 in 1,000 which he intended to inject submucously in the nose.

Evidence was given by the theatre sister that this injection should have been prepared by two nurses. Nurse No. 1 should have taken the top off a bottle of xylocaine from the

bottom of an instrument trolley and poured the contents into a sterile galley pot on top of the trolley with nurse No. 2 checking. An ampoule of adrenaline should then have been checked from the bottom of the trolley and nurse No. 2 should have drawn the required amount from the ampoule and added it to the xylocaine. Nurse No. 1, in fact, first emptied a bottle of topical adrenaline into the galley pot without nurse No. 2 checking, and nurse No. 2 then drew off the adrenaline required from the ampoule (which was checked) and added it to the galley pot. A syringe full of this mixture was handed to the surgeon.

The surgeon stated that his routine was to ask the nurse what the syringe contained: he thought he did so on this occasion but could not swear to it. The surgeon injected about 5 ml. of the solution. After about five minutes the patient coughed up a little blood and said his body felt queer. Within a few seconds he went unconscious. Various methods of resuscitation were applied but the heart stopped beating. Open cardiac massage was applied successfully, and after the heart had been beating for 20 minutes the incision was sewn up. The patient subsequently died.

Medical Notes in Parliament

CARE OF THE ELDERLY

[FROM OUR PARLIAMENTARY CORRESPONDENT]

There was much substance in the observations made in the House of Lords on December 13 that that House regularly turns its attention to the social services. On this occasion it was directed to do so by Lord AMULREE. His purpose was to bring to notice the deficiencies in the arrangements for the care of the elderly, both sick and infirm.

At more than one point in his survey his claim was that although much had been done much remained still to do, and this was the consensus of the debate, with some suggestions on how it should be done. There was general agreement, for instance, on the need for closer integration of the voluntary services—for which everyone had nothing but praise—with the statutory services; and of course a reiterated emphasis on the need for housing accommodation appropriate to the requirements of the ageing, which Lord Amulree himself put forward as the crux of the problem.

What is Ageing?

There was also a brief dissertation from Lord TAYLOR on the theme: Is old age as we know it a normal process or a disease? Some human tissues, he said, if grown in tissue cultures outside the body would apparently grow on for ever. Many years ago a tumour was taken from a woman called Helen Lane which had been subcultured and grown in laboratories all over the world (the HeLa tissues). There was a rare condition called progeria—he had seen only one case—which was premature senility occurring in children. The one he knew was a little girl aged 13, but her body was that of a woman of 70 or 80; she had advanced osteoarthritis, arteriosclerosis, and her mind was the mind of an old person. In this premature ageing he found a clue. It must be a disease. It must be that something had gone wrong with that child and made her tissues grow old far too quickly. It might be, he surmised, that in due course they would be able to prevent this disease, so that people would grow old in years but not in their minds and bodies. What excellent things could follow from that!

The coming of antibiotics, modern anaesthesia, and modern surgery on the old had started to make longevity the rule. In the next 20 or 30 years there would be fresh biochemical advances which might have even more spectacular results. To examine the obituary notices (he instanced *The Times*) and strike out everything that happened to persons before they were 50 showed that this nation was already a gerontocracy. Both power and influence were largely in the hands of the over-fifties. In British politics a measure of gerontocracy had been long established. Most of the superlative craftsmen were in their sixties, often the late sixties or early seventies. At these high levels often the right thing was the dull thing. It might be objected that gerontocracy tended to negate the creative or artistic side of politics, yet experience did not bear that out.

Understaffed Geriatric Departments

Lord AMULREE referred to those among the five-million-odd pensioners who required some sort of geriatric service. Geriatric departments had been set up, he said, in about 100 hospitals—generally in the former chronic-sick wards of the old Poor Law infirmaries. One of the troubles was staffing in these departments. A survey made by the British Geriatric Society had found that in seven regional hospital board areas there was one physician in charge of 400 beds. That made practical, good medicine almost an impossibility, particularly as the doctor was often not of consultant status. The other difficulty was the shortage of ancillary staff. Some of the buildings should have been demolished years ago. There was also a shortage of beds, so that people who really needed hospital accommodation found it increasingly difficult to obtain one as they grew older. More elderly people were being eventually discharged, to live literally alone. Residential accommodation under the 1948 National Assistance Act for persons who by age, infirmity, or otherwise were in need of care and attention was extremely limited. Surely building for these purposes merited a higher priority than a national theatre. A lot had been done, but not nearly enough.

Register of the Aged

Lady SUMMERSKILL urged that, to bring the services available to those in the greatest need, there should be a register of the aged and some system of notification to ensure that the large number of aged persons living alone should be adequately cared for. It would also facilitate co-ordination of the services and prevent wasteful overlapping. Lord STONHAM pointed to the glaring need for one responsible authority or person in each area to whom the old people could turn for advice and help; and he suggested that this should rest with the medical officer of health, whose status gave him the confidence of Government departments and whose leadership would be accepted by the voluntary organizations. Progressive medical officers already fulfilled this co-ordinating function to some extent, but their powers were insufficient and there were great variations in the quality of the services provided.

Government's Aims

Lord NEWTON, speaking for the Government, seemed to add a pendant to Lord Taylor's prognosis when he gave some comparative figures of the rising age of the population: in 1955 there were just over five million people aged 65 or over; in 1975 it was estimated the number would be about seven million—or one in seven of the population. He summarized the Government's aims as being to encourage and help the elderly to live in their own homes as long as they could; to provide special housing (with or without resident wardens) for those who needed it; to provide residential accommodation suitable to their needs for those who required care beyond that which could be made available in their own homes; and to provide hospital beds for those requiring treatment or prolonged nursing care.

In the domiciliary services he named as the linchpin the family doctor, who according to a recent sample survey was seeing those patients over 65 twice as often as those between 15 and 45. The family doctor also had the responsibility of bringing into action the other services available. He buttressed his argument about the advances made in all these services with a series of figures, and said that the first and most important step in improving the geriatric services in any area was the appointment of a specialist physician interested and experienced in the care

of old people (on whom he added that it was hoped the increasingly close relationship between geriatrics and general medicine would attract more staff into the specialty). He concluded that for the future they must and could look to hospital and local authorities to work even more closely together, so that they might have a more accurate assessment of the need to make their dispositions accordingly.

QUESTIONS IN THE COMMONS

[FROM OUR PARLIAMENTARY CORRESPONDENT]

Contracting Out of the Service

Commander J. S. KERANS (The Hartlepools, Con.) asked the Minister of Health on December 11 how many general practitioners had contracted out of the Health Service from 1955 onwards. Mr. E. POWELL said there had been 4,350 withdrawals between January 1, 1955, and July 1, 1960. Reasons for withdrawals were not notified, but death or retirement accounted for the majority.

Commander KERANS asked the Minister if he would agree that there was a growing sense of frustration among many general practitioners in the Health Service, mainly because of the overladen capacity of the work they had to do, and the frustration of administration. "Would the Minister," he said, "look into the question whether we can get more doctors from the Commonwealth and elsewhere to supplement the present deficiencies in the Health Service?" Mr. POWELL: "I could not agree that there is a growing sense of frustration, and in fact the number of general practitioners on Health Service lists is increasing." Certainly, the Minister continued, the figures he had given did not contain evidence to support Commander Kerans's contention.

Doctors from Overseas

Mr. R. SORENSEN (Leyton, Lab.) asked the Minister how many of the present number of local practitioners and hospital medical staff, respectively, were of overseas, Commonwealth, British colonial, Irish, and foreign origin; how many of these were trained in this country; and how many doctors of British birth had left for overseas service during the past five years. Mr. POWELL stated that last March 2,505 of the junior medical staff in hospitals in Great Britain were from the colonies and other Commonwealth countries, 375 from the Irish Republic, and 748 from other countries overseas. Of the total, 392 had qualified in Great Britain. Information was not available for other hospital staff or general practitioners, nor were the figures of British-born doctors who had left for overseas service.

Tuberculosis Among Immigrants

Mr. L. PAVITT (Willesden, West, Lab.) wanted to know what was the incidence per 1,000 of active pulmonary tuberculosis in West Indian immigrants for each of the past three years, and was told that the information was not available. He quoted the figure of one per 1,000 given recently in the *Journal*,* and asked, "In view of the very low incidence, is it not nonsense to seek to exclude West Indians from coming here on grounds of health? Would it not be far better to treat these people and send them out into the world cured than to exclude them from coming to this country?" Miss EDITH PITT, Parliamentary Secretary, replied that the question of entry was another matter, but it was correct that the incidence of tuberculosis among West Indians was on the average not higher than in the rest of the population. It was higher among Asians.

Commander KERANS: "Would the Parliamentary Secretary agree that the recent report by the B.M.A. showed there was a high incidence of tuberculosis among people coming here from the Asian countries, and from the West Indies? Will she look into this again?" Miss PITT told him that she had referred to Asians in an earlier answer. She added that in general she had no reason to believe that immigrants from the Commonwealth had been responsible for bringing infectious disease to this country to an extent likely to involve risk to public health.

British Medical Journal, December 16, p. 1624.

Homes Without Baths or Lavatories

Mr. FRANK ALLAUN (Salford, East, Lab.) asked the Minister of Health if, without waiting for the full publication of the 1961 census, he would state the number of households it revealed without a bath, sharing a bath, without an inside toilet, or without hot water. Miss PITT told him that these figures would appear in one of the first series of reports for local areas. It would not be practicable to produce them in advance. Mr. ALLAUN pressed the point that these figures were of such importance to millions of families that this information should be given priority. Miss PITT disagreed, and explained that the processing of all statistical information arising from the census was already in full spate. To take out one set of figures and produce them at an earlier stage than was proposed in the pattern would delay all the other figures.

Welfare Foods

Mr. KENNETH ROBINSON (St. Pancras North, Lab.) asked the Minister if, in view of the official figures showing a drop of more than 70% in the take-up of orange juice and cod-liver oil at the new prices, he would reconsider his policy in regard to subsidy on vitamin supplements and introduce regulations to amend the Welfare Foods (Amendment) Order. Mr. POWELL, answering this and three other similar questions, said No. Welfare foods remained a cheap source of vitamins, along with the many other sources now available. They could be supplied free if necessary. Their availability had been further publicized.

Mr. ROBINSON asked if the Minister were not really concerned with the size of this fall. What did the Parliamentary Secretary mean in the debate on April 19 when she said that if there was a substantial fall the matter would have to be reconsidered by the Government? Why had that pledge not been implemented? Mr. POWELL replied that the problem was one of individual and particular families. That was not best dealt with by a general subsidy, but by the work of health visitors who could get to the actual families when there was a deficiency of intake. Generally speaking, there was no reason to believe there was a deficiency of intake of these vitamins. Mr. S. T. SWINGLER (Newcastle-under-Lyme, Lab.) asked what the Ministry had done to discover the real reasons for such a startling fall over so short a period. Mr. POWELL said the reasons were given in debates earlier this year—that there was no longer any reason for an overall subsidy to every recipient of these foods. They were available free when there was need.

Vaccination Against Brucellosis

Mr. H. HYND (Accrington, Lab.) asked the Minister of Agriculture, Fisheries, and Food on December 7 what action he proposed to control the movement of cattle suffering from brucellosis and to prevent the spread of undulant fever from the milk they produced. Mr. W. M. F. VANE, Parliamentary Secretary, told him that the line of attack on brucellosis abortus was by way of calf vaccination. More than 94% of milk sold retail in England and Wales was heat-treated, and medical officers had power to control the disposal of infected or suspect milk. Movement controls beyond those laid down in the Epizootic Abortion Order, 1928, would not be practicable or useful at the present time. Mr. HYND suggested as an alternative method the introduction of a one-clause Bill to prohibit the sale of raw milk.

Industrial Health Service

Mr. SWINGLER asked the Minister of Labour on December 11 if he would summon a meeting at the earliest convenient date of the Industrial Health Advisory Committee of his department to discuss the next steps to be taken to establish a comprehensive industrial health service. Mr. JOHN HARE replied that the next meeting of the committee had been fixed for May 8, 1962. The committee would then be

considering further means of encouraging the development of medical services in industry, but the Government relied on voluntary action in that field.

Mr. SWINGLER: "Is not this sabotage by the Minister himself? Is it not deplorable that the Minister should have cancelled the November meeting of this committee when it was due to consider the B.M.A. scheme for establishing a comprehensive industrial service? Is he not aware of the protests of both the B.M.A. and the T.U.C., who were not consulted about the cancellation?" Would he call an early meeting and try to get on with the job? Mr. HARE said that Mr. Swingler was quite wrong in talking about sabotage. There was no agenda for this meeting except a number of reports which had been circulated and on which there were no comments. He personally placed great value on the work of this committee, but he thought we had a great deal to learn from the experimental work, which had only just been put into effect. Mr. SWINGLER asked if both the T.U.C. and the B.M.A. had not written to the Minister regretting that he had cancelled the November meeting? Would he not call an early meeting? Mr. Hare admitted that was true, but pointed out that other bodies were represented on this committee and they had not taken similar action.

Mr. R. E. PRENTICE (East Ham, North, Lab.) said the position was that some big firms had good health services, but only a small percentage of the small firms were covered by group schemes. The only way to tackle this was through some national plan for an occupational health service. Mr. HARE replied that neither Mr. Prentice nor anybody else should take up a fixed attitude. "We had better await the lessons which we shall gain from the valuable experiments which are only now being put into effect."

Transistor Hearing-aids

Mr. LESLIE HALE (Oldham, West, Lab.) asked if the Minister of Health was now satisfied that an adequate and satisfactory supply of bone-conductor hearing-aids is available. Miss PITT said that the supply of Medresco valve-type bone-conductor hearing-aids was satisfactory, but they would be replaced by a lighter transistor model as soon as possible.

Hospital Orders Under Mental Health Act

Mr. K. ROBINSON asked the Minister of Health on December 12 if he was aware that several cases had arisen where a hospital had agreed to accept a patient suffering from mental disorder on a Hospital Order made under section 60 of the Mental Health Act, and on admission it was found that a further Order restricting discharge under section 65 had been made by the court; and if he would arrange for hospitals to be informed, when they were asked in advance to accept such a patient, that a section-65 Order was in contemplation, and to be authorized to refuse admission when a patient arrived under such an Order without prior notice. Mr. POWELL said that the decision whether to make a Hospital Order, with or without an Order restricting discharge, rested entirely with the court, whose conclusion could not be known when a hospital was asked to accept a patient in the event of such Order or Orders being made.

Local Authority Staffs in Greater London

Mr. J. BARTER (Ealing, North, Con.) asked the Minister of Housing and Local Government, in view of the prospective abolition of approximately 60 local authorities in the Greater London area, what action he proposed to allay the anxiety of the staff of all local authorities in the area; and if he would give an assurance that the Government would ensure that there would be opportunities for reasonably comparable employment or adequate compensation.

Dr. CHARLES HILL said that no doubt the staff required by the new authorities to be created in Greater London would be recruited very largely from persons already serving in local government in that area. He recognized, however, that there would be considerable disturbance and difficult adjustments for some staff, although the reorganization would also create new opportunities for service. The Government were studying the whole question. The legislation which would be introduced to give effect to the changes in organization would certainly contain provision for compensation in respect of loss of employment or reduction in pay arising from the changes.

Vital Statistics

Febrile Illness in Dorset Public Schools

Outbreaks of upper respiratory infection occurred just before the end of term at Bryanston and Milton Abbey Schools in Dorset, over 100 of the 450 Bryanston boys having been affected and 50 of the boys at Milton Abbey. Dr. H. F. G. Hensel, medical officer to both schools, has kindly given us information about these outbreaks. The presenting symptoms have been headache, fever, signs of tracheitis, and sore throat, though the throat appears normal on examination. The infection seems to be fairly mild, though two cases of pneumonia have been seen. Sporadic cases of a similar illness have occurred in local households. Virological investigations are in hand.

Dr. W. Fielding, medical officer of health of Bournemouth, informs us that a similar febrile illness has been occurring in Bournemouth schools (particularly among younger children), up to 50% of the pupils having been absent for a few days.

An outbreak of acute respiratory infection among schoolchildren in Pembrokeshire occurred last month (see *Journals* of November 25, p. 1442, and of December 9, p. 1582) and was found to be due to influenza B virus.

Hospital In-patient Statistics

The first part of a statistical inquiry by the Ministry of Health and General Register Office into the numbers and types of patients admitted to hospitals in England and Wales in 1958 was published last year (see *Journal*, 1960, **1**, 1439). The second part was published last week. It shows that over the country as a whole there were 685.4 "spells of in-patient care" (excluding psychiatric patients) ending in 1958 for every 10.000 males and 882.2 for every 10.000 females. There were considerable regional differences: Sheffield region had the lowest rate for males (537.6) and Greater London the highest for both males (806.7) and females (1,009.3). Rates for individual diseases also showed large differences.

As to waiting time in 1958, 54% of males and 46% of females (other than maternity cases) were admitted immediately (for all diseases combined), and 39% of the males and 47% of the females were admitted from the waiting or booking list. Both males and females waited approximately the same time: 21% had been admitted within a week, 28% within a month, 40% within 1 to 6 months, and 11% within 6 months or more (admission to chronic hospitals included). About 90% of patients with respiratory tuberculosis, cancer of the lung, and cancer of the breast were admitted within a month, and about 20% of those with uterovaginal prolapse, strabismus, and enlarged tonsils and adenoids waited 6 months or more.

Only 45.7% of maternity cases admitted were completely normal. The mean length of stay after delivery was 9.6 days, compared with 10 days in 1957 and 11 days in 1955. —*Report on Hospital In-patient Enquiry for the Year 1958*, Part II, 1961, H.M.S.O., London. Price 17s. 6d. net.

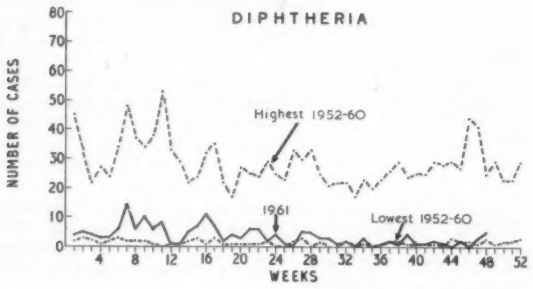
Population Estimates

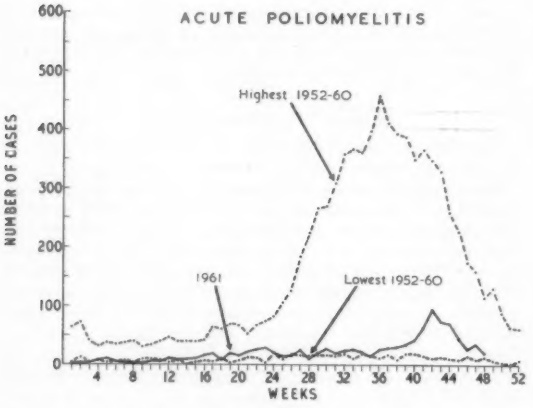
The latest estimates of the population of England and Wales show that it is still growing and becoming more

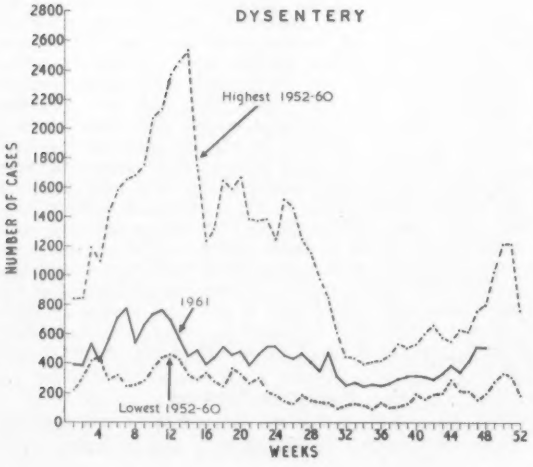
urban. The total population increased by about 1% from mid-1960 to mid-1961, amounting to 46,166,000. The familiar trek south continued, with more people settling in parts of the Midlands, areas round London, and along the south coast. At the same time there was a slight movement out of the largest cities into the suburbs.—*Annual Estimates of the Population of England and Wales and of Local Authority Areas*, 1961 (H.M.S.O., 1s. 6d. net).

Graphs of Infectious Diseases

The graphs below show the uncorrected numbers of cases of certain diseases notified weekly in England and Wales. Highest and lowest figures reported in each week during the years 1952–60 are shown thus ------, the figures for 1961 thus ———. Except for the curves showing notifications in 1961, the graphs were prepared at the Department of Medical Statistics and Epidemiology, London School of Hygiene and Tropical Medicine.







INFECTIOUS DISEASES AND VITAL STATISTICS

Summary for British Isles for week ending **December 2** (No. 48) and corresponding week 1960.

Figures of *cases* are for the countries shown and London administrative county. Figures of *deaths* and *births* are for the whole of England and Wales (London included), London administrative county, the 17 principal towns in Scotland, the 10 principal towns in Northern Ireland, and the 14 principal towns in Eire.

A blank space denotes disease not notifiable or no return available.

The table is based on information supplied by the Registrars-General of England and Wales, Scotland, N. Ireland, and Eire, the Ministry of Health and Local Government of N. Ireland, and the Department of Health of Eire.

CASES	1961 Eng. & Wales	1961 Lond.	1961 Scot.	1961 N. Ire.	1961 Eire	1960 Eng. & Wales	1960 Lond.	1960 Scot.	1960 N. Ire.	1960 Eire
Diphtheria ..	5	1	2	0		3	3	2	0	1
Dysentery ..	507	34	259	14	8	646	50	136	4	13
Encephalitis, acute	4	0		0		1	0		0	
Enteric fever:										
Typhoid ..	2	0	0	1		0	0	0	0	
Paratyphoid ..	1	0	0	0		7	1	0	1	
Food-poisoning ..	153	15	8	1		144	25	8	2	
Infective enteritis or diarrhoea under 2 years				14	25				15	40
Measles*	1,148	30	17	105	145	7,234	400	197	37	114
Meningococcal infection	16	0	4	0		16	3	9	0	1
Ophthalmia neonatorum	24	5	2	0		34	2	2	0	
Pneumonia† ..	245	17	145	6	1	273	25	183	1	2
Poliomyelitis, acute:										
Paralytic ..	14	2	3	0	4	12	4	0	0	
Non-paralytic ..	7	2	0			1	0	0		
Puerperal fever§ ..	152	36	9	1		173	26	13	0	1
Scarlet fever ..	549	45	41	14	5	536	37	70	18	19
Tuberculosis:										
Respiratory ..	375	48	70	12		381	57	58	8	
Non-respiratory	46	5	17	0		50	6	14	4	
Whooping-cough	202	29	34	9	4	1,096	73	86	4	67

DEATHS	1961 Eng. & Wales	1961 Lond.	1961 Scot.	1961 N. Ire.	1961 Eire	1960 Eng. & Wales	1960 Lond.	1960 Scot.	1960 N. Ire.	1960 Eire
Diphtheria ..	0	0	0	0	0	0	0	0	0	0
Dysentery ..	0	0		0		1	0		0	
Encephalitis, acute		0			0		0			0
Enteric fever ..	0	0	0	0		0	0	0	0	
Infective enteritis or diarrhoea under 2 years	11	1	1	0	0	10	0	1	0	0
Influenza	38	2	0	0	0	15	0	2	0	2
Measles		0	0	0	0		0	0	0	0
Meningococcal infection		0	1				0	0		
Pneumonia ..	696	54	28	25	12	521	38	25	22	7
Poliomyelitis, acute	3	0		0	0	1	0		0	0
Scarlet fever ..		0	0	0	0		0	0	0	0
Tuberculosis:										
Respiratory ..	65	2	6	1	5	87	7	11	1	3
Non-respiratory		0		0	0		0	1	1	0
Whooping-cough	0	0	0	0	0	0	0	0	0	0
Deaths 0–1 year ..	295	9	34	167	10	332	24	28	7	14
Deaths (excluding stillbirths) ..	11,147	860	672	149	167	10,359	806	633	157	177
LIVE BIRTHS ..	14,253	1300	973	262	452	14,768	1253	988	255	420
STILLBIRTHS .	274	22	25			293	26	17		

* Measles not notifiable in Scotland, whence returns are approximate.
† Includes primary and influenzal pneumonia.
§ Includes puerperal pyrexia.

Medical News

Middlemass Hunt Chair of Tropical Hygiene, Liverpool University

Dr. T. WILSON, senior lecturer in tropical hygiene in the Liverpool School of Tropical Medicine, has been appointed to the Middlemass Hunt Chair of Tropical Hygiene from January 1 on the retirement of Professor T. H. DAVEY.

Dr. Wilson, who is 56 years of age, was educated at Queen's University, Belfast, where he obtained the M.B., B.Ch., B.A.O. in 1927, the D.P.H. in 1929, and the degree of M.D. (with commendation) in 1952. In 1930 he was awarded the Diploma in Tropical Medicine and the Diploma in Tropical Hygiene. From 1927 to 1929 he was resident and senior resident medical officer at the Belfast City Hospital, and from 1929 to 1931 medical officer at the Central Health Board, Federated Malay States. He was appointed health officer with the Malayan Medical Service in 1931. During the war Dr. Wilson served with the F.M.S. Volunteer Force, and later as a Captain in the R.A.M.C.; subsequently he was a prisoner of war in Malaya and Thailand. On demobilization in 1946 he returned to the Malayan Medical Service as health officer and acting senior health officer. In 1949 he joined the Institute of Medical Research in Kuala Lumpur as a senior malaria research officer, and was appointed acting director in 1953 and director in 1956. He has held his present post since 1959. In the same year he was appointed C.B.E. Dr. Wilson's published work has been mainly on malaria and filariasis.

Lister Institute of Preventive Medicine

The Lister Institute of Preventive Medicine announces with regret the resignation of Sir HENRY DALE, O.M., F.R.S., from the chairmanship of the governing body. Sir Henry has been chairman for the past 20 years and is now succeeded by Sir CHARLES DODDS, F.R.S., director of the Courtauld Institute of Biochemistry at the Middlesex Hospital Medical School, and a governor of the Lister Institute since 1956.

University College, Ibadan

Twenty of the 25 candidates from University College, Ibadan, who sat for the third M.B., B.S. examination of the University of London last October passed the entire examination. Three obtained distinctions and five were referred in sections of the examinations. Two of the successful candidates are women, the first ever to qualify as doctors from the University College: Miss SUBQAT OLUDAYISI DARAMOLA, and Miss OLABOPO CAMERON-COLE, who gained a distinction in surgery.

U.S.A. National Library of Medicine's Anniversary

This year marks the 125th anniversary of the founding of the National Library of Medicine, U.S.A., and it is hoped that this month will mark the completion and dedication of the library's new building, a drawing of which is shown here. The director, Dr. F. B. ROGERS, commenting on the fact that the building represents the successful culmination of over 40 years of effort, says that "we hope it will be adequate to house the core of library operations for the next 100 years." The new library is in the National Institutes of Health reservation in Bethesda, Maryland, and occupies 232,000 square feet of floor space on five levels. The main reading-room has accommodation for 100 readers at individual tables, a display of 2,000 current periodicals, and shelving for 10,000 reference volumes, indexes, and abstracts.

Doctors in the Congo

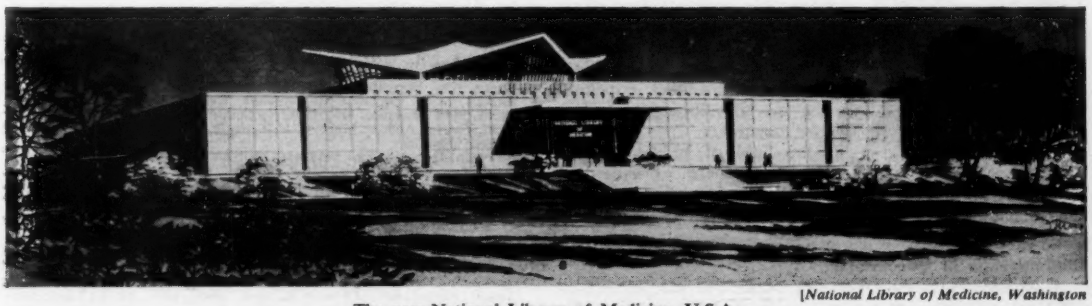
After a ten-day tour of W.H.O.'s work in the Congo Dr. F. GRUNDY, Assistant Director-General of W.H.O., has said that the Organization intends to increase the staff engaged in services for medical care there by another 70 people, thus bringing the total to over 200. Describing the long-term training programme for Congolese medical and auxiliary staff undertaken by W.H.O., he said that the 60 Congolese medical assistants who were sent for training as doctors in France over a year ago are making good progress and that the overwhelming majority of them are passing their examinations and will be ready within the foreseen period of two to three years. In addition another 50 medical assistants went to Europe for training a few months ago and will be ready in about three years' time. When graduated these 110 Congolese doctors will form the backbone of the Congolese health services of the future. Another six Congolese are taking the full six-year medical course in Europe, while two Congolese graduated in medicine from Lovanium University last July and more are expected to do so.

British Medicine in India

The Department of History of Medicine, Hyderabad, wishes to build up a library and museum. The library needs books, articles, reports, records, letters, and bibliographies of British medical officers who worked in India during the eighteenth and nineteenth centuries, while the museum would like to acquire pictures, photographs of groups and of medical institutions, documents, diplomas, old notebooks, instruments, *memorabilia*, and so on associated with medical officers. Information about such material, or gifts of originals or copies, would be appreciated, and should be sent to the address given below. The department is also preparing a bibliography of Indo-European medical literature. Much of this was contributed by the surgeons of the East India Company and by officers serving in the Indian Medical Service. The department would be grateful if anyone with special knowledge of this subject would communicate directly with Dr. D. V. SUBBA REDDY, The Upgraded Department of History of Medicine, Osmania Medical College, Nizam Bagh, Diwan Devdi, Hyderabad, Andhra Pradesh, India.

Daphne Somerset Fry Memorial Trust

A memorial trust has been set up in memory of Mrs. Daphne Somerset Fry, who died in February of Bright's disease. The trust, which numbers among its trustees Sir GEORGE PICKERING and Lord COHEN OF BIRKENHEAD, hopes to raise £120,000. When the money is raised Oxford University has agreed in principle to establish the Daphne Somerset Fry Professorship of Medical Research, with special reference to Bright's disease and cognate problems. The university will also provide the necessary research organization.



[National Library of Medicine, Washington

The new National Library of Medicine, U.S.A.

Psychiatric Research and the Cavendish Hotel

". . . One can go to Shepheard's parched with modernity any day, if Lottie likes one's face, and still draw up, cool and uncontaminated, great, healing draughts from the well of Edwardian certainty." The Cavendish Hotel in Jermyn Street, on which this description of Shepheard's in Evelyn Waugh's *Vile Bodies* was based, is owned by the Bethlem Royal Hospital and the Maudsley Hospital, and the trustees are at present negotiating the sale of a building lease. The demolition of the Cavendish would thus add indirectly to the hospitals' general funds for psychiatric research and development. Bethlem Hospital, which dates from 1247, acquired the stretch of land on which the Cavendish is built in 1830 from the Commissioner of Woods and Forests in part exchange for some of Bethlem's land at Charing Cross. The transaction is believed to have been part of the Commissioner's scheme to acquire land there for the building of a triumphal road for the Duke of Wellington.

"Journal of Psychiatric Research"

The new publication, *Journal of Psychiatric Research*, will be published quarterly under the editorship of Dr. SEYMOUR KETY (Henry Phipps Psychiatric Clinic, Johns Hopkins Hospital, Baltimore 5, Maryland, U.S.A.), to whom papers should be submitted for publication. English is at present the preferred language for papers. Pergamon Press, Ltd., are the publishers (4 and 5 Fitzroy Square, London W.1), and the subscription rate is £7 a year for organizations and £3 10s. for individuals.

"British Medical Students' Journal"

The concluding article on "A Visit to Russia" appears in the autumn issue of *B.M.S.J.*, as well as the prizewinning essay in the B.M.A.'s Medical Students' Essay Competition, 1961, "The Position of the Doctor in Modern Society." There is an article on "The Indwelling Pacemaker in the Treatment of Heart Block," and "A Look at Low Country" in which a visit to Holland by a group of seven students from London hospitals is described. "Perhaps the best eye-opener," the writer says, "was the new sky-scraper hospital in Rotterdam—the Dijkziegt. Here were all the fittings that hospital builders and doctors dream of . . . we felt honoured to be the first group of foreign students to visit the hospital." *B.M.S.J.* costs 6d. to members, and 1s. to non-members, from B.M.S.A., B.M.A. House, Tavistock Square, London W.C.1.

American College of Chest Physicians

The American College of Chest Physicians is inviting entries for an essay competition for undergraduate medical students. The essays may be written on any phase of the diagnosis and treatment of chest diseases. The College's address is 112 East Chestnut Street, Chicago 11, Illinois, U.S.A. The closing date is April 1, 1962.

Kimble Award for Scotsman in Canada

Dr. R. D. STUART, director of the Provincial Laboratories in Alberta, Canada, and head of the Department of Bacteriology in the university there, has been awarded the Kimble Methodology Award of $1,000 and a silver plaque for the development of a new holding medium for bacteriological specimens. The award is intended to give "public recognition and financial reward to an individual . . . who contributes outstandingly to developing new or better methods of procedure in the field of public health." Dr. Stuart, who is 56, and a graduate of Aberdeen University, went to Canada in 1949. He was previously city bacteriologist in Glasgow and university lecturer in bacteriology there.

Poliomyelitis in Queensland

Queensland's Deputy Director of Health has announced that poliomyelitis has reached epidemic proportions in the state for the first time since 1952. There have been 50 cases in the first part of the present financial year compared with 28 in the previous financial year. Salk vaccine has now been administered to about 90% of children there and 50% of adults.

National Research Development Corporation

Among development projects reported on for the first time in the National Research Development Corporation's annual report are vaccines against the common cold and against the trachoma virus. The arrangements made are similar to those already in force for cephalosporin-C and interferon.

People in the News

▶ Professor W. J. H. BUTTERFIELD, Dr. HONOR FELL, Ph.D., and Professor C. H. WADDINGTON, D.Sc., are among the 180 new Fellows elected to the New York Academy of Sciences. ▶ Professor M. ABERCROMBIE, professor of embryology at University College, London, has been appointed to the Jodrell chair of zoology and embryology at that College from October 1, 1962.

COMING EVENTS

Mayor of Westminster's Appeal for Mental Health.—Royal gala première, "The Valiant," January 4, 7.45 p.m. for 9 p.m. Tickets from (or donations to) Odeon Theatre, Leicester Square, London W.C.2.

Auxiliary Royal Army Medical Corps Fund.—Special general meeting to consider Fund's winding up, January 8, 4.45 p.m., 11 Chandos Street, London W.1.

Institute of Urology.—Weekend course, "Essentials of Urology," January 12–14. See *Journal* advertisement, p. 32.

Ciba Foundation Lecture on Research on Ageing.—(In conjunction with meetings of British Society for Research on Ageing and British Geriatrics Society.) Dr. R. J. VAN ZONNEVELD (Nederlands Instituut voor Praeventieve Geneeskunde, Leiden), "National Survey of the Health of the Aged in the Netherlands," January 19, 5 p.m., Littlewood Hall, General Infirmary, Leeds. Chairman: Professor R. E. TUNBRIDGE. Free, without ticket.

Royal Infirmary, Glasgow.—Otolaryngology Lecture: Mr. H. SHAW, Treatment and Prognosis in Cancer of the Larynx and Laryngopharynx," January 20, 11 a.m., Department of Surgery, Royal Infirmary, Glasgow. Open to all practitioners and members of the specialty.

BIRTHS, MARRIAGES, AND DEATHS

DEATHS

Bachmann.—On November 26, 1961, in Rome, Paul Albert Bachmann, M.R.C.S., L.R.C.P., of 370 Kingston Road, Ewell, Surrey.

Browne.—On December 4, 1961, at the Langton Hotel, Cheltenham, James Arthur Browne, M.B., B.Ch.

Cochran.—On November 28, 1961, at Kilmarnock Infirmary, John Cochran, L.R.C.P.&S., L.R.F.P.S., of 31 Dundonald Road, Kilmarnock, Ayrshire, aged 56.

Garry.—On November 12, 1961, at the County Hospital, Ennis, Co. Clare, John William Garry, M.B., B.Ch., D.P.M., aged 80.

Haigh.—On November 29, 1961, at Geneva, William Edwin Haigh, F.R.C.S., D.T.M., D.P.H., of 419 Burton Road, Derby, aged 83.

Irving.—On December 6, 1961, John Bruce Irving, M.R.C.S., L.R.C.P., of 236 Abington Avenue, Northampton.

Lawrie.—On December 4, 1961, in hospital, Hugh Brown Lawrie, M.B., Ch.B., of The Holme, Sabden, near Blackburn.

Martin.—On December 7, 1961, William Strelley Martin, *M.C.*, M.B., Ch.B., D.P.H., Brigadier, late R.A.M.C., retired, of Yards House, Douglas, Lanarkshire.

Milburn.—On December 3, 1961, Leslie Milburn, M.R.C.S., L.R.C.P., D.P.H., of St. Nectan's, St. Leonards, Ringwood, Hants, aged 89.

Murphy.—On November 30, 1961, at South Lodge, Tower Road, Hindhead, Surrey, Andrew Murphy, M.B., B.Ch., Lieutenant-Colonel, I.M.S., retired, aged 88.

Paris.—On December 3, 1961, at Hallyburton Lodge, Coupar, Angus, Perthshire, William Paris, L.R.C.P.&S., L.R.F.P.S.

Pearson.—On December 1, 1961, at 19 Kew Terrace, Glasgow, George Pearson, M.B., Ch.B.

Smart.—On December 1, 1961, James Smart, M.B., Ch.B., of Castlehill, Dunoon, Argyll.

Wilson.—On December 3, 1961, at Torbay Hospital, Norman Methven Wilson, C.I.E., O.B.E., M.R.C.S., L.R.C.P., D.T.M.&H., Major-General, Indian Medical Service, retired, aged 80.

Wood.—On December 4, 1961, at Hawkmoor Chest Hospital, Bovey Tracey, Devon, Albert Edward Bathurst Wood, M.B., Ch.B., Lieutenant-Colonel, R.A.M.C., retired, aged 85.

Any Questions?

We publish below a selection of those questions and answers which seem of general interest. It is regretted that it is not possible to supply answers to all questions submitted.

Resistance of Leprosy Bacilli to Dapsone

Q.—*Has resistance to dapsone been demonstrated in the treatment of leprosy?*

A.—This question has been raised frequently in view of the remarkable effect of the sulphones in the treatment of leprosy. Naylor,[1] working with *M. phlei*, failed to obtain sulphone-resistant mutants, and Erickson[2] stated in relation to relapsed cases that regression of lesions occurred with resumption of "promin" (a disubstituted sulphone) treatment. Furthermore, Garrett[3] stated that "no definite case of dapsone (D.D.S.) resistance has yet been shown." Nevertheless, in spite of the lack of demonstrable evidence of resistance developing under sulphone therapy, two observations are of importance. (1) A small proportion of cases never become completely inactivated—that is, after more than four years *M. leprae* can still be found on routine examination. (2) Relapses under sulphone therapy have been reported.

It is the experience of all those who have had to deal with active and serious lepromatous cases of leprosy that a certain proportion begin to improve satisfactorily, the bacilli show marked morphological change, and the bacteriological index of the patient falls satisfactorily, and then some acute crisis arises—e.g., surgical operation, intercurrent disease, malignancy, pregnancy, or even a severe emotional upset—and the patient relapses. In such cases not only does the bacteriological index rise but, whereas before the relapse the patient showed scanty acid-fast bacilli with gross morphological change, the *M. leprae* are now seen in "globus formation" (globi seem to be present only in the most active cases of lepromatous leprosy). When patients show a marked clinical and bacteriological advancement of the disease it is better to change the treatment entirely and for a period of two years to give a remedy which has no structural relationship to the sulphones. Therefore, whatever experimental evidence can be deduced for the lack of sulphone-resistant organisms, the experience of many workers in this respect tends to cause one to be cautious in making such a statement.

Erickson[2] was the first to indicate that cases under sulphone therapy do relapse occasionally, and he has stated that "over a five-year period, in which the follow-up varied from six months to five years after arrest of lepromatous leprosy on sulfone therapy, relapse rates of 45% for patients not continued on sulfones and 4.5% for those continued on treatment were experienced." Most leprologists recommend that a patient with lepromatous leprosy should continue treatment for the rest of his life, but even so one cannot deny that there is a relapse rate. This rate is very difficult to estimate because, unlike under the old hydnocarpus therapy, where 60% to 80% of all cases relapsed between one and six years after reaching the state of negativity, relapses under sulphone therapy occur after a longer period. Furthermore, bacteriological deterioration takes place before clinical deterioration, and therefore a person may be in relapse for a number of years before he is actually recognized as having relapsed, unless he goes periodically to an institution for a check-up. In my own experience I would place the relapse rate among the cases who have continued sulphone therapy at approximately 10%.

With this evidence before us it seems that one cannot say categorically that there is no evidence of resistance developing to sulphone therapy. Nevertheless it is difficult to explain just what resistance means, because it is known that those cases that do relapse after stopping sulphone therapy respond almost as well as new cases when put back on sulphones. But in my experience those patients who relapse even though they continue with sulphone therapy do not respond when the therapy is maintained, and one has to change over to one of the other anti-leprosy drugs. Ellard[4] stated recently that "many workers have expressed surprise that no case in which leprosy bacilli have become resistant to D.D.S. has been substantiated, although some patients on sulphone therapy are 'not cured' after even ten years' treatment, and in many cases there are periods during treatment in which little or no progress appears to be made. It is possible that in such cases an equilibrium may be reached between the amount of sulphone absorbed by the bacilli and the amount of P.A.B. they synthesize. If a drug could be found capable of inhibiting the P.A.B. synthesis of mycobacteria it might be highly synergistic when used with the sulphones and the sulphonamides, and would be particularly useful in cases responding inadequately to sulphone therapy."

The conclusion, therefore, must be that, while resistance to sulphone therapy has not been scientifically established, standard therapy with dapsone will not render inactive every lepromatous case, and that not only do relapses occur but a minority of patients remain positive for many years and possibly for a lifetime. It is a fair statement, I think, that so long as acid-fast organisms can be found in any form then the patient is potentially capable of relapsing. In my opinion, therefore, a discussion on the possibility of D.D.S. resistance in leprosy is more academic than practical, and it is a dangerous form of wishful thinking to believe that resistance does not develop to dapsone therapy. If one does believe that, then one is in danger of adopting too complacent an attitude towards the control of leprosy through therapeutic measures, for it is a known fact that there are few, if any, diseases which can be controlled by curative measures alone.

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2 Erickson, P. T., *Publ. Hlth Rep. (Wash.)*, 1950, 65, 1147.
3 Garrett, A. S., *Leprosy Rev.*, 1956, 27, 54.
4 Ellard, G. A., *E. Afr. med. J.*, 1960, 37, 765.

Cleansing Milks

Q.—*What are the active agents in cosmetic cleansing milks? Would cetrimide solution be as effective in patients with greasy skins?*

A.—Cleansing milks are usually emulsions in which a proportion of mineral oil (such as liquid paraffin) is emulsified in water in the presence of triethanolamine soaps, emulsifiers comparable with emulsifying wax, *B.P.*, sulphated or sulphonated alcohols, or sulphated or sulphonated fatty acids. Their precise formula is of course not revealed. Applicatio detergens, *B.N.F.* (4th edition, 1957), is a simplified formula of this sort. Glycerin, perfume, and preservative are usually added. The active agent in any of these milks must of course be the surface-active emulsifier. Some people might well find a cetrimide solution to be a satisfactory cleanser, and there is in general no objection to its repeated use over a long period, though allergic sensitivity may occasionally arise.

Circulatory Changes in E.C.T.

Q.—*What happens to the blood-pressure in unmodified E.C.T. and in E.C.T. modified with anaesthetic and relaxant?*

A.—During unmodified E.C.T. given by the method described by Sargant and Slater[1] continuous photographic records of blood-pressure made from a needle in the brachial artery showed the following changes. The pulse disappeared for about 3–4 seconds immediately after giving the shock; when it returned the rate was slower at first but quickly increased. Both systolic and diastolic pressures rose to a peak during the next 5–10 seconds, during the end of the

tonic and beginning of the clonic stages of the fit. There was a consistent decrease in pulse pressure; the systolic rise was about 60%, the diastolic about 120%. The pressures fell slowly during the clonic stage, more rapidly when movements stopped. As breathing began there were violent blood-pressure swings, depending on the degree of respiratory obstruction. Mean pressure and pulse pressure remained lower than before the fit for several minutes at least.

During E.C.T. modified with anaesthetic (thiopentone) and relaxant (suxamethonium) the course of events following the shock was similar but the changes were smaller and smoother. If no atropine was given the pulse stopped for 3–5 seconds, with a falling blood-pressure curve, similar to that during cessation of the heart in Stokes–Adams attacks or after an intravenous acetylcholine injection,[2] until the pulse started again, when it accelerated and systolic and diastolic pressures rose rapidly. This was not seen when atropine gr. 1/60 (1 mg.) was given before treatment, when there was a smooth, steady rise from the moment of the shock. The systolic and diastolic rises during modified E.C.T. were about 35% and 50% respectively.

These changes were preceded by other dramatic events during the preliminary modifying procedures. Atropine resulted in acceleration without much pressure change. Intravenous thiopentone was followed by a slight fall in pressure. After the intravenous suxamethonium injection there was no consistent change, but occasionally there was slowing with a marked rise in pressure. Inflation with oxygen through a mask often produced a marked fall in blood-pressure and pulse pressure of the type seen in the Valsalva manœuvre, and there was a corresponding "overshoot"[3]—i.e., reflex rise in blood-pressure and pulse-pressure—when the raised intrathoracic pressure achieved by the anaesthetist was released. The pressure change following the E.C.T. itself was often no greater than this reflex rise. The pressure remained up during the fit and interference waves appeared as the muscle relaxant wore off. There was a gradual fall during recovery, with appearance of characteristic respiratory blood-pressure swings as spontaneous breathing started.

There is no evidence to suggest that there is any danger associated with the circulatory changes in either modified or unmodified E.C.T. The increases in blood-pressure are no greater than those normally taking place during everyday life or when coughing, straining at stool, and so on. Observations made in hypertensive subjects showed that the rise in blood-pressure during treatment was much less than in normotensive patients, and experience confirms that high blood-pressure and indeed other cardiovascular diseases need not be contraindications to this treatment.

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Reiter Protein Complement-fixation Test

Q.—*Does the Reiter protein complement-fixation test for syphilis make the W.R. and Kahn test obsolete?*

A.—The Reiter protein complement-fixation test (R.P.C.F.T.) detects a treponemal group specific antibody[1] distinct from the reagin antibody which gives positive reactions with tests using tissue extract antigens, such as the W.R. and Kahn tests. The R.P.C.F.T. is more specific than the tests for reagin,[2] but the relatively high cost of the antigen makes it uneconomical as a routine procedure. It has not made the reagin tests obsolete but is best used in conjunction with them as a confirmatory test. A convenient plan is to use tests such as the W.R. or Kahn as screening procedures and to examine sera which are reactive with them by means of the R.P.C.F.T. When both the reagin tests and the R.P.C.F.T. are positive, indicating the presence of two distinct antibodies, the probability of treponemal disease is very high indeed. The R.P.C.F.T., like all other serological tests for syphilis, does not distinguish syphilis from the other treponemal diseases.

The pattern of positive reagin tests with a negative R.P.C.F.T. usually, but not always, suggests that the reactions with the reagin tests are non-specific. Because this combination of results may also be found with sera from some patients with treponemal disease the finding of a negative R.P.C.F.T. does not necessarily exclude infection. If this pattern of results is found, and there is no definite clinical evidence of treponemal infection, a treponemal immobilization test is usually advisable to arrive at a diagnosis.

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Booster Dose of Salk Vaccine

Q.—*A man who is shortly going to India has had a course of three injections of Salk polio vaccine, the last injection being 2½ years ago. Should he have a fourth injection?*

A.—There is a fair chance that having had a course of three properly spaced doses of Salk polio vaccine the man has a reasonably satisfactory protection against poliomyelitis. It is, however, justifiable to doubt whether the vaccine used 2½ years ago was as potent as the Salk-type vaccines in current use, and for this reason it is recommended that he should have a fourth dose before proceeding to India.

Corrections.—The first line of the summary of the preliminary communication on "An Isotope Test of Calcium Absorption" by Dr. S. D. Bhandarkar and his colleagues (December 9, p. 1539) should have read: "Calcium-47 in 250 mg. of calcium as calcium chloride was given. . . ."

We much regret an error in the reporting of Professor T. Crawford's contribution to the Conference on Arterial Diseases at the Nuffield Institute of Comparative Medicine (December 9, p. 1561). We wrongly stated that he ascribed the change of emphasis towards thrombosis as the important factor in arterial disease as having followed the work of Professor J. N. Morris. Professor Crawford writes: "In fact of course this change of emphasis was entirely due to the work of Professor J. B. Duguid, whose important papers were published in 1946 and 1948. I was at pains to emphasize this fact in my talk at the meeting and in fact gave a long verbatim quotation from Professor Duguid's 1946 paper."

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